

**PROCESSED CSMIP STRONG-MOTION RECORDS FROM THE  
LANDERS AND BIG BEAR, CALIFORNIA  
EARTHQUAKES OF 28 JUNE 1992:**

**SAN BERNARDINO - I10/215 INTERCHANGE**

R. DARRAGH

T. CAO

M. HUANG

A. SHAKAL

Report No. OSMS 93-08

California Strong Motion Instrumentation Program

California Department of Conservation

Division of Mines and Geology

Office of Strong Motion Studies

801 K Street, MS 13-35, Sacramento, California 95814-3531

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## INTRODUCTION

Important sets of records were obtained from the I10/215 Interchange bridge southwest of San Bernardino during the Landers and Big Bear earthquakes of 28 June 1992. The bridge instrumented is the connecting structure between I10 from Los Angeles and I215 toward San Bernardino. The bridge, about 2540 feet long and 90 feet high near the center, was seismically strengthened by Caltrans in 1991 and instrumented with 34 sensors by the California Strong Motion Instrumentation Program (CSMIP). The sensor location sheet shows the locations of the 34 sensors installed on the bridge. The locations of the sensors were selected to achieve specific instrumentation objectives (Huang and Shakal, 1993). In addition, a nearby reference ground-response station (San Bernardino - E & Hospitality) located approximately 400 to 450 m east of the bridge also recorded both earthquakes.

During the Landers and Big Bear earthquakes, the peak horizontal ground accelerations at the nearby reference ground-response station were 0.09 and 0.10 g, respectively. Higher accelerations, 0.81 and 1.02 g, were recorded on the bridge deck during the Landers and Big Bear earthquakes, respectively. The many spikes on some of the records are due to interaction of the bridge superstructure across the hinges (Malhotra and others, 1993). These are the first significant records from this type of bridge in California.

Records from all CSMIP stations are presented in the Landers and Big Bear data report on the earthquakes (Shakal and others, 1992; Huang and others, 1992). Digitization and processing of these records started after the data reports were completed and is continuing. The preliminary results of digitizing and processing for 6 ground-response stations that recorded the Landers earthquake were included in the first release report (CSMIP, 1992). The results of digitizing and processing 8 stations, including 6 ground-response stations and 2 buildings were included in the second release report (Darragh and others, 1992). The results of digitizing and processing 10 ground-response stations were included in the third release report (Darragh and others, 1993). This report supersedes an earlier report (CSMIP, 1993) by including the processing of the reference ground-response station data from both earthquakes and the bridge data from the Big Bear earthquake. Further details on accelerogram digitizing and processing will be presented in the forthcoming final CSMIP processed data report.

## PLOTS OF PROCESSED DATA

The processing results from the San Bernardino - I10/215 Interchange and the San Bernardino - E & Hospitality stations are presented below. For each station there is a group of plots which is identified by a set number at the

upper corner of each page as follows:

<u>Set No.</u>	<u>Station Name</u>	<u>No. of Channels</u>
Landers Earthquake:		
1	San Bernardino - I10/215 Interchange	34
2	San Bernardino - E & Hospitality	3
Big Bear Earthquake:		
3	San Bernardino - I10/215 Interchange	34
4	San Bernardino - E & Hospitality	3

The order of the plots for each station is as follows:

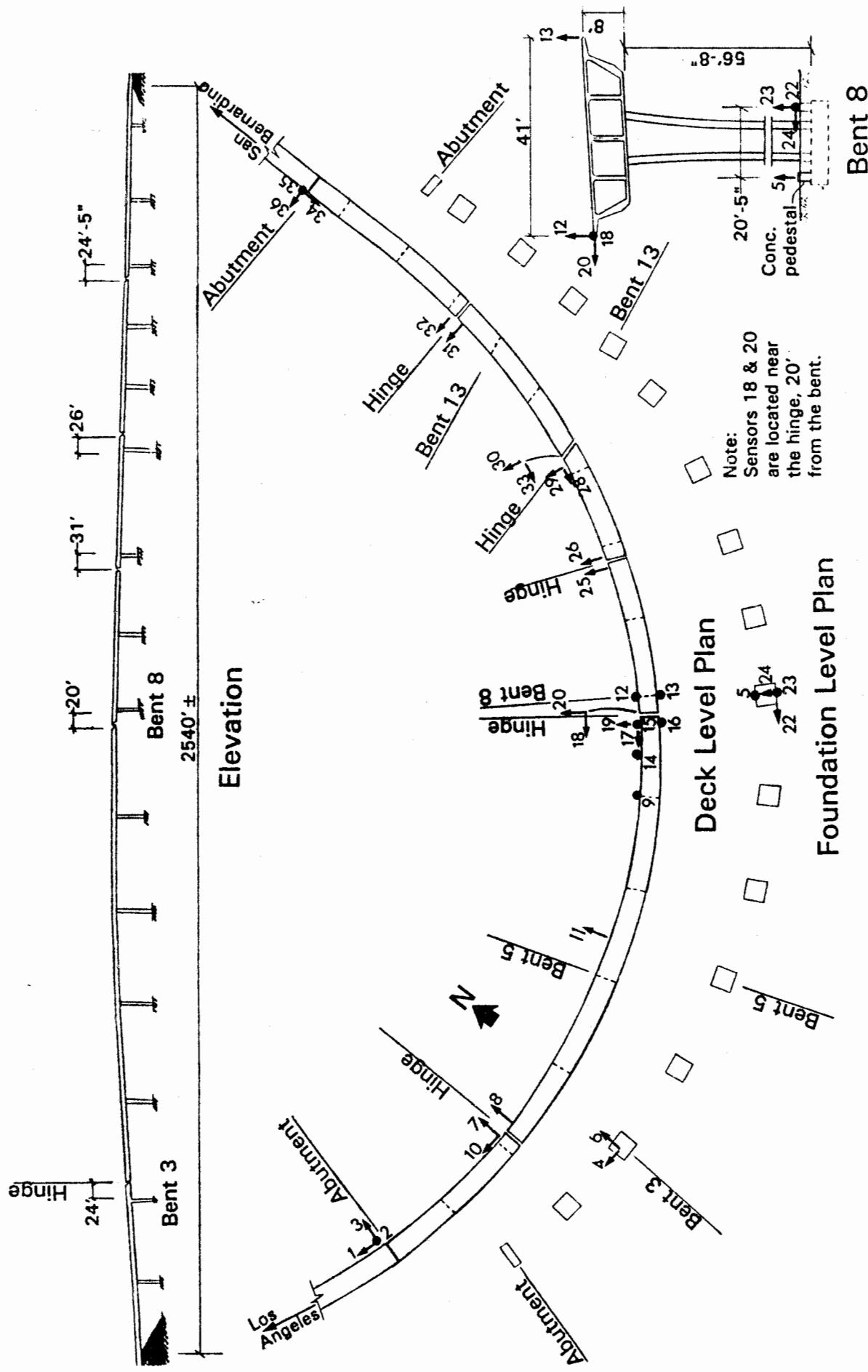
1. The raw record for the first 44 seconds is presented. The 34 channels at the interchange are plotted with a common scaling factor on three pages. The 3 channels at the ground-response station are plotted with a common scaling factor on a single page.
2. Phase 1 (Vol. 1) data: uncorrected accelerations. Acceleration for the first 44 seconds are plotted with a common scaling factor for all channels; three channels are plotted on one page. This plot is followed by another plot of the full processed length (120 and 100 seconds for Landers and Big Bear, respectively) with each channel individually scaled.
3. Phase 2 (Vol. 2) data: instrument and baseline-corrected acceleration, velocity and displacement. The data for the first 60 seconds are plotted with equal scaling for all channels. The filter frequencies used in the processing are indicated on the plots (see Usable Data Bandwidth).
4. Phase 3 (Vol. 3) data: response spectra. The pseudo-velocity spectra (PSV), the pseudo-acceleration spectra (PSA), the displacement spectra (SD), and the Fourier amplitude spectra (FS) are presented on a tripartite logarithmic plot for each channel. The spectra are plotted for periods within the filter bandwidth used in the Vol. 2 processing. In addition, the absolute acceleration spectra (SA) for 0%, 2%, 5%, 10%, and 20% dampings are plotted against period for periods from 0 to 3 seconds with linear-linear scaling.

Notes:

- A) The San Bernardino - I10/215 Interchange and San Bernardino - E & Hospitality acceleration data were recorded on digital recorders connected to force balance accelerometers with a natural frequency of 50 Hz. The following two changes have been made to CSMIP standard processing which increase the accuracy and resolution at high frequencies:
  - 1) The sample rate for the Phase 2 (Vol. 2) acceleration, velocity and displacement data is 100 samples per second for these digital recorders. In contrast, a sample rate of 50 samples per second has been used in previous CSMIP data from analog recorders.

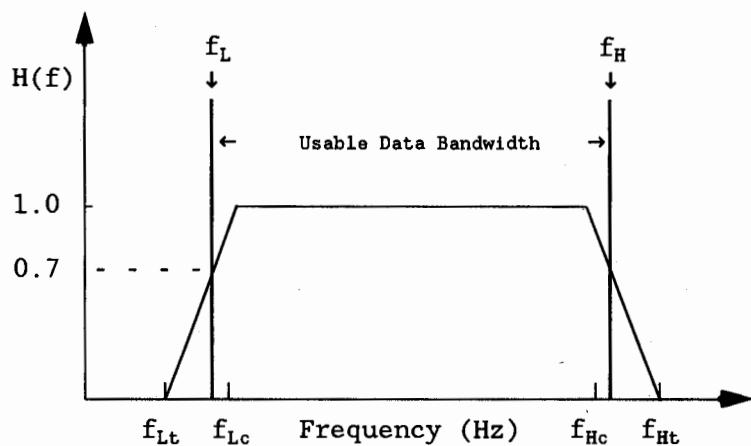
- 2) The high frequency filter has a corner frequency of 46 Hz and a roll-off termination frequency of 50 Hz. A corner frequency of 23 Hz and a roll-off termination frequency of 25 Hz is commonly used in CSMIP data for analog recorders. This filter selection preserves the digitally recorded high frequency information better.
- B) The low frequency filter has a corner frequency of 0.20 Hz and a roll-off termination frequency of 0.10 Hz (see Usable Data Bandwidth). This filter is used for all channels recorded at the bridge and at the nearby ground-response station to make channel-to-channel comparisons convenient.
- C) The orientation of the horizontal sensors on the bridge is given by:  
LONG - Locally Parallel to Bridge  
TRAN - Locally Transverse to Bridge
- D) The orientation of the horizontal sensors at San Bernardino - E & Hospitality is given by:  
90° - East (true geographic direction)  
180° - South (true geographic direction)
- E) The ground-response and the bridge instruments triggered at different times. The time in the structure record can not be decoded for either earthquake. For the Landers earthquake data it appears that the bridge triggered approximately 2 to 3 seconds after the reference ground-response station. For the Big Bear earthquake data it appears that the bridge triggered approximately 0.6 to 0.8 seconds after the reference ground-response station.
- F) Sensors 21 and 27 were not installed on the bridge at the time of the Landers and Big Bear earthquakes.

## San Bernardino - I10/215 Interchange (CSMIP Station No. 23631) SENSOR LOCATIONS



### DEFINITION OF USABLE DATA BANDWIDTH

The filter bands for each record are indicated on the plots for the Phase 2 and Phase 3 data. The digitized data are processed and filtered using Ormsby filters. The data are first low-pass filtered using a high-frequency filter with a corner frequency of 46 Hz and a roll-off termination frequency of 50 Hz. Then the data are high-pass filtered using a low-frequency filter with a corner frequency of 0.20 Hz and a roll-off termination of 0.10 Hz. Therefore, the Phase 2 data is the result of the digitized data being filtered by the bandpass filter  $H(f)$  with ramps as shown in the figure:



The usable data bandwidth is defined as the band between frequencies  $f_H$  and  $f_L$ , where  $f_H$  and  $f_L$  are the -3 dB points on the high-frequency and low-frequency ramps, respectively. The value of  $H(f)$  is approximately equal to 0.7 for -3 dB (see Notes). The user should only use these data for analyses within this bandwidth.

#### Notes:

- 1) The values of  $f_H$  and  $f_L$  can be calculated from the corner frequencies ( $f_{Hc}$ ,  $f_{Lc}$ ) and the roll-off termination frequencies ( $f_{Ht}$ ,  $f_{Lt}$ ) used in the processing by using the formulas  $f_H = f_{Hc} + 0.3 * f_{Ht} - f_{Hc}$  and  $f_L = f_{Lc} - 0.3 * (f_{Lc} - f_{Lt})$ . For this processing, the usable data bandwidth, for data bandpass-filtered with ramps at 0.10 to 0.20 Hz and 46.0 to 50.0 Hz, is 0.017 Hz to 47.2 Hz (0.021 to 5.9 seconds period).
- 2) It is common in signal processing to plot  $20 \log_{10}[H(f)]$  versus frequency, and express the ordinate value in decibels (abbreviated dB). Accordingly, 0 dB corresponds to a value of  $H(f)$  equal to 1; 20 dB is equivalent to  $H(f) = 10$ , and -20 dB corresponds to  $H(f) = 0.1$ . Thus, at the -3 dB frequency point, the amplitude of the transfer function,  $H(f)$ , is reduced to 0.7, while the power transmitted by the filter,  $H^2(f)$ , is reduced to 0.5.

## REFERENCES

CSMIP Staff (1992). Preliminary processed strong-motion data for the Landers earthquake of 28 June 1992, Calif. Div. Mines and Geology, Office of Strong Motion Studies, Report No. OSMS 92-11, 60 p.

CSMIP Staff (1993). Plots of the processed data for San Bernardino - I10/215 Interchange from the Landers earthquake of 28 June 1992, Calif. Div. Mines and Geology, Office of Strong Motion Studies, Report No. OSMS 93-06, 110 p.

Darragh, R., T. Cao, C. Cramer, F. Su, M. Huang and A. Shakal (1992). Processed strong-motion records from the Landers earthquake of 28 June 1992: Release No. 2, Calif. Div. Mines and Geology, Office of Strong Motion Studies, Report No. OSMS 92-13, 156 p.

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Huang, M., A. Shakal, T. Cao, P. Fung, R. Sherburne, R. Sydnor, P. Malhotra, C. Cramer, F. Su, R. Darragh and J. Wampole (1992). CSMIP strong-motion records from the Big Bear, California earthquake of 28 June 1992, Calif. Div. Mines and Geology, Office of Strong Motion Studies, Report No. OSMS 92-10, 236 p.

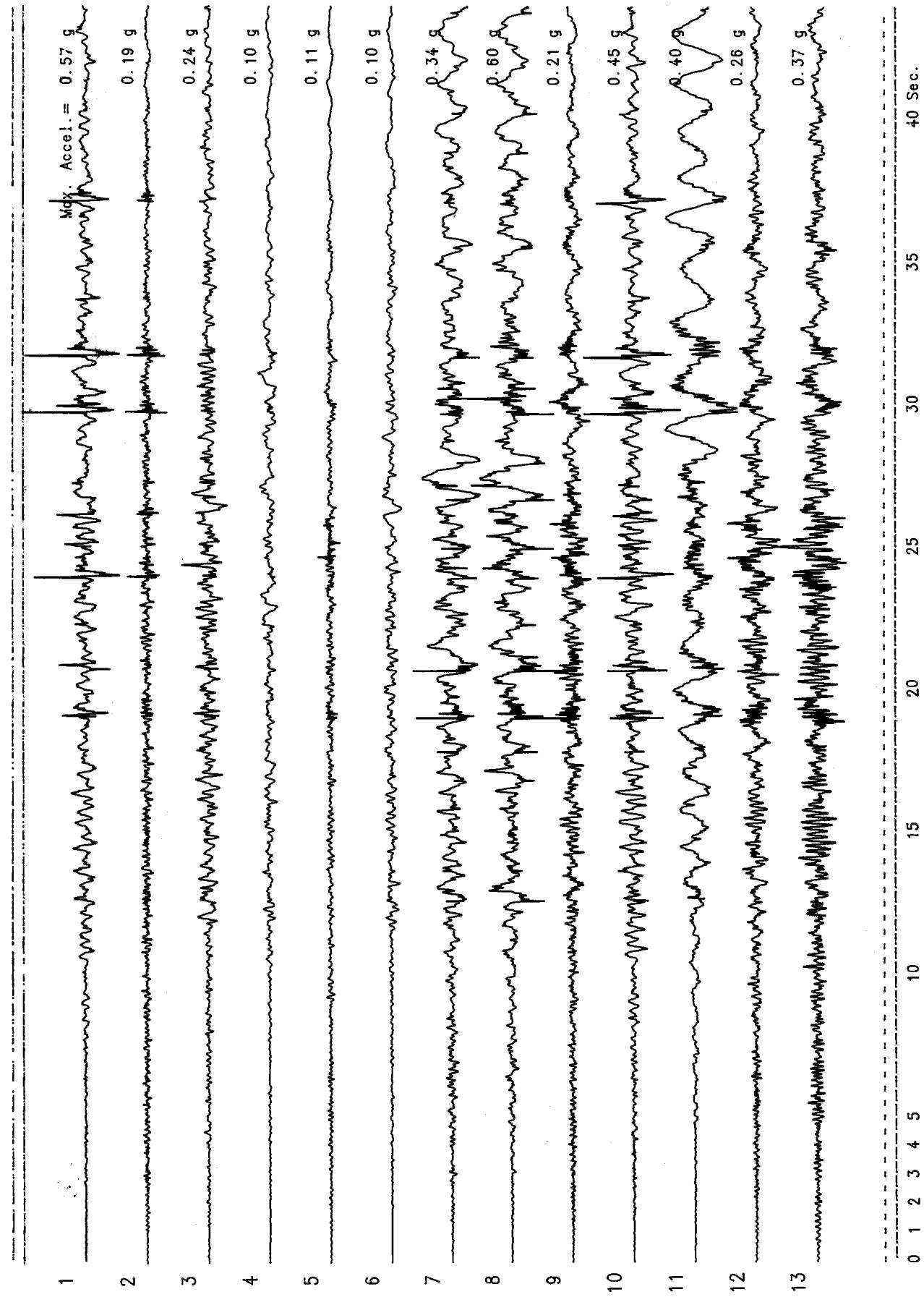
Huang, M. and A. Shakal (1993). Strong-motion instrumentation and records from the I10/215 Interchange bridge in San Bernardino, Earthquake Spectra (submitted for publication).

Malhotra, P., M. Huang, and A. Shakal (1993). Interaction at separation joints of a long bridge during 1992 earthquakes in California (abstract), submitted to the Fifth U.S. National Conference on Earthquake Engineering.

Shakal, A., M. Huang, T. Cao, R. Sherburne, R. Sydnor, P. Fung, P. Malhotra, C. Cramer, F. Su, R. Darragh and J. Wampole (1992). CSMIP strong-motion records from the Landers, California earthquake of 28 June 1992, Calif. Div. Mines and Geology, Office of Strong Motion Studies, Report No. OSMS 92-09, 330 p.

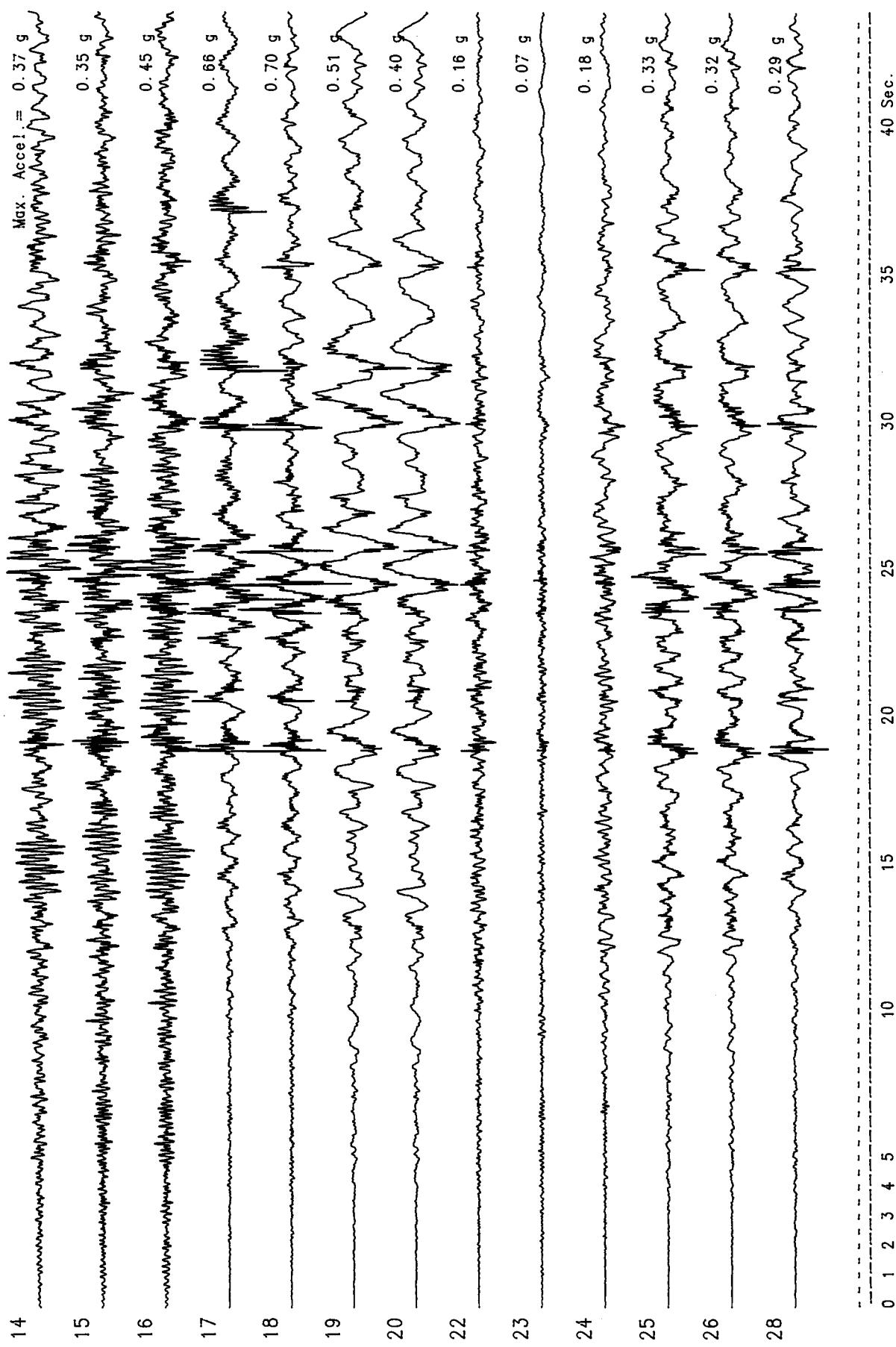
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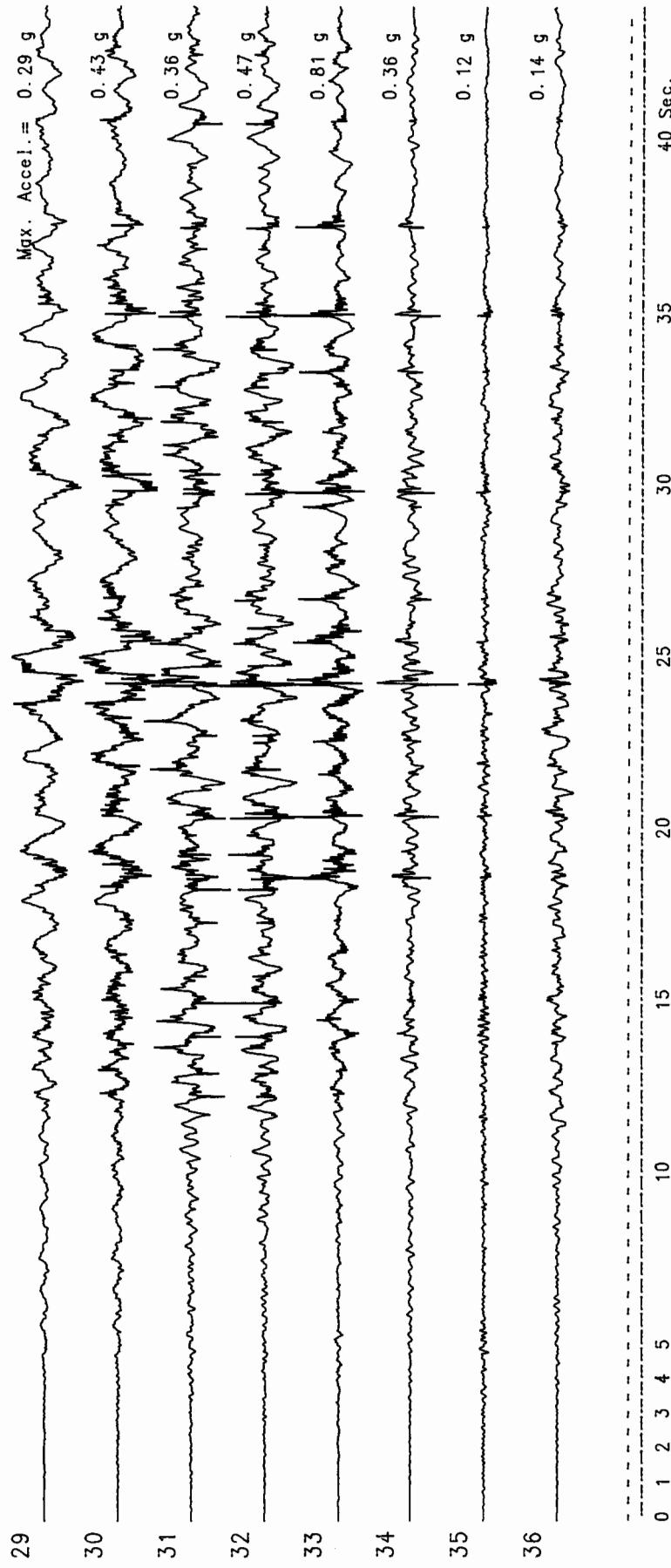
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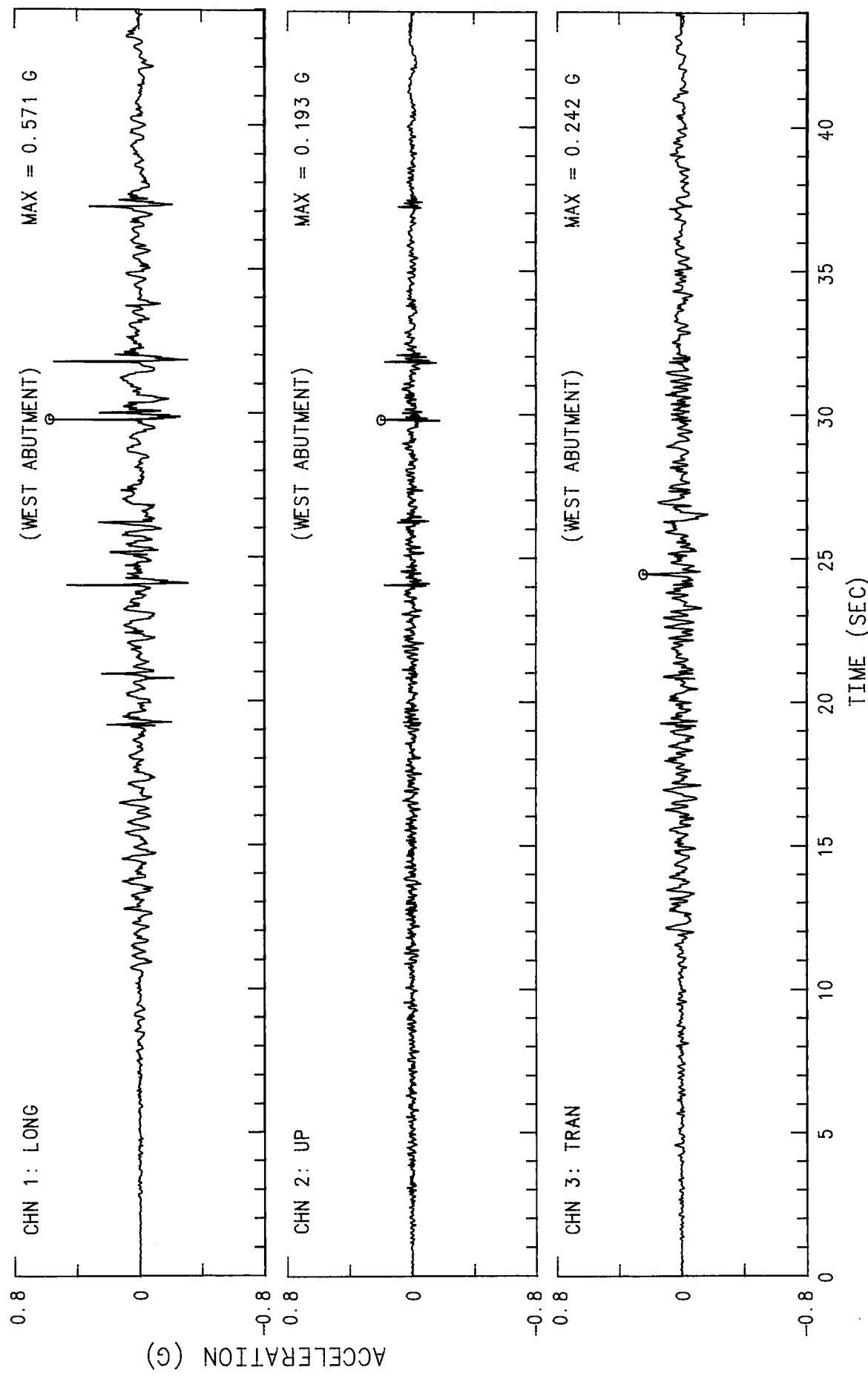


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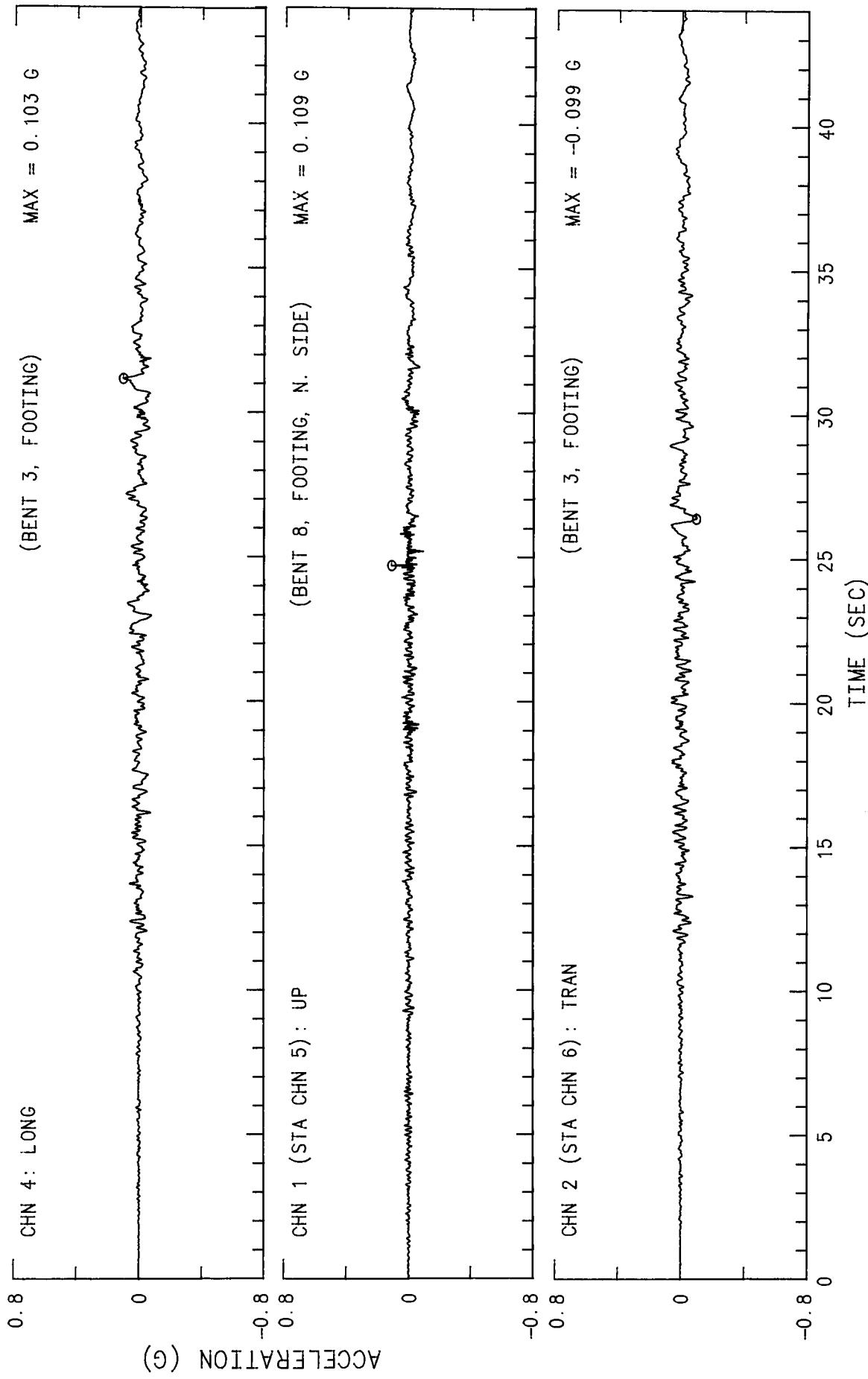
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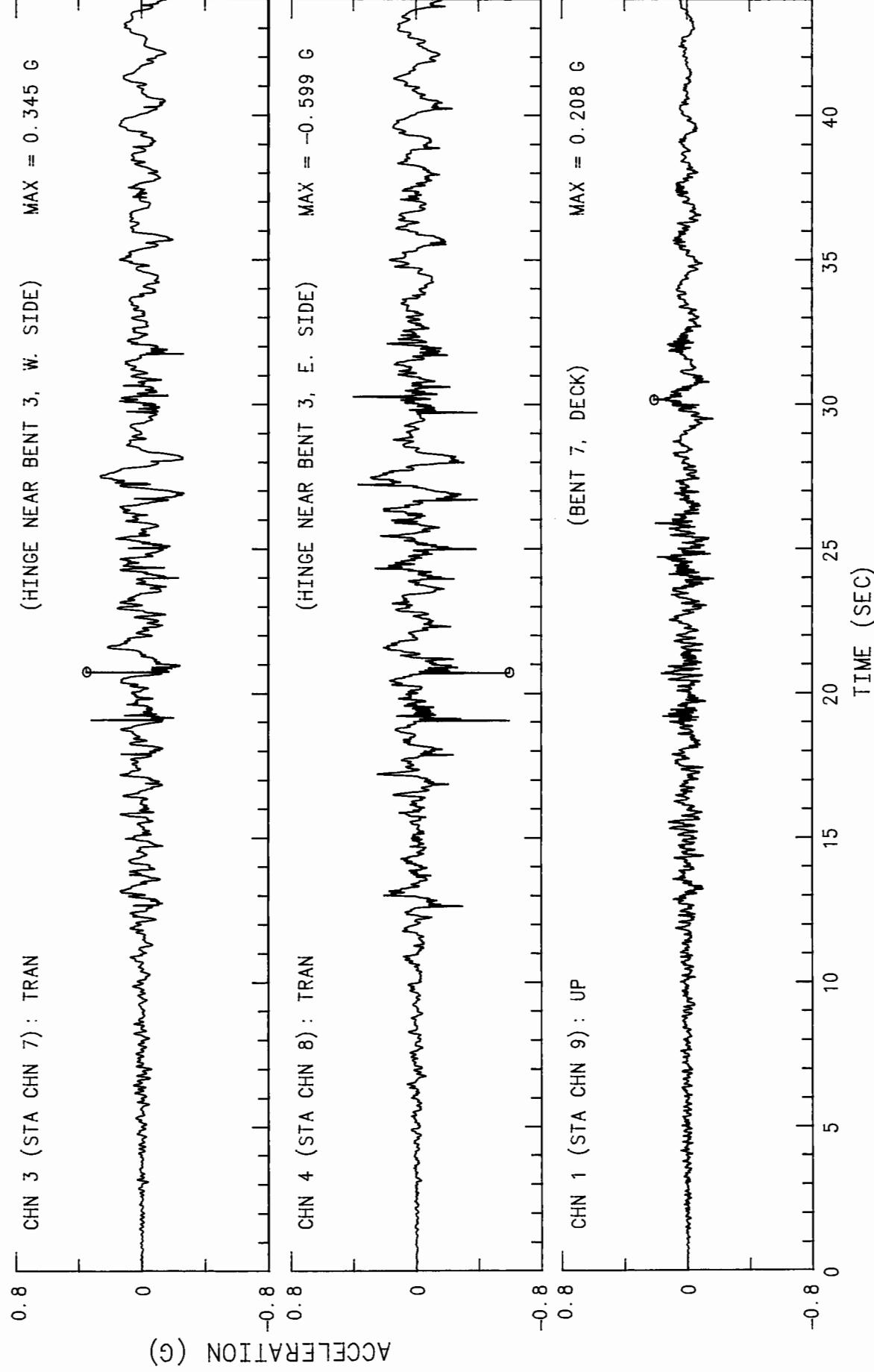


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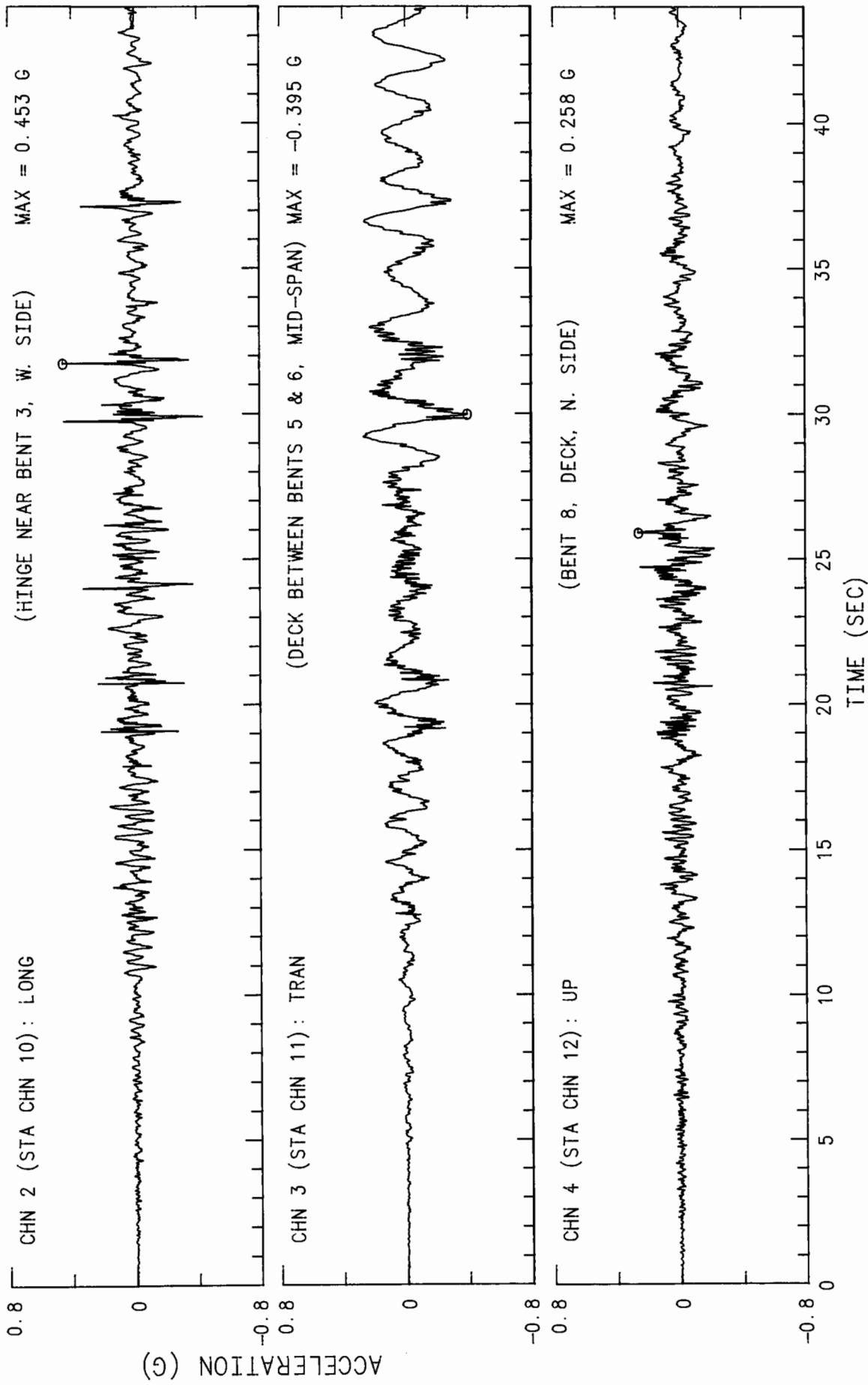
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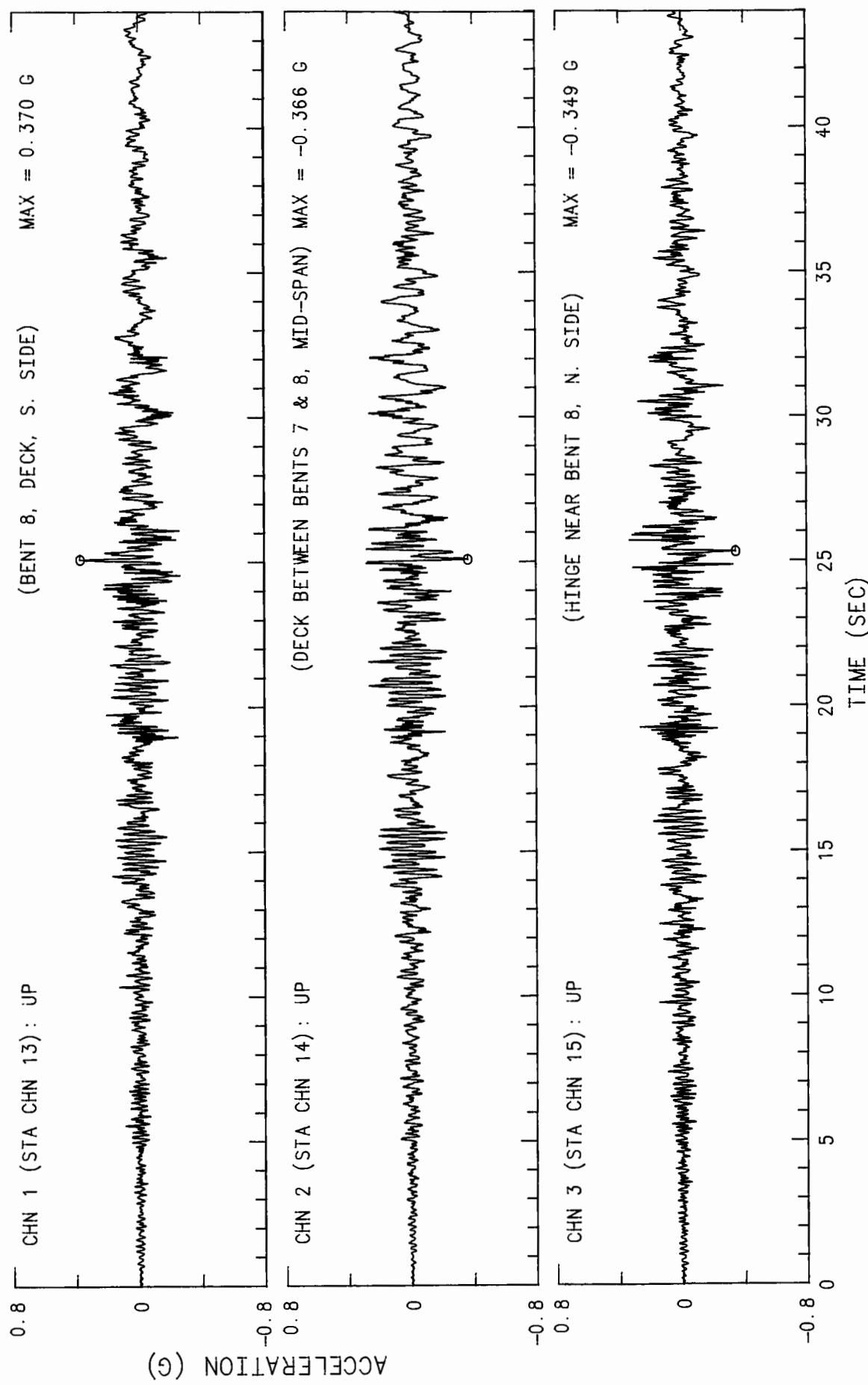


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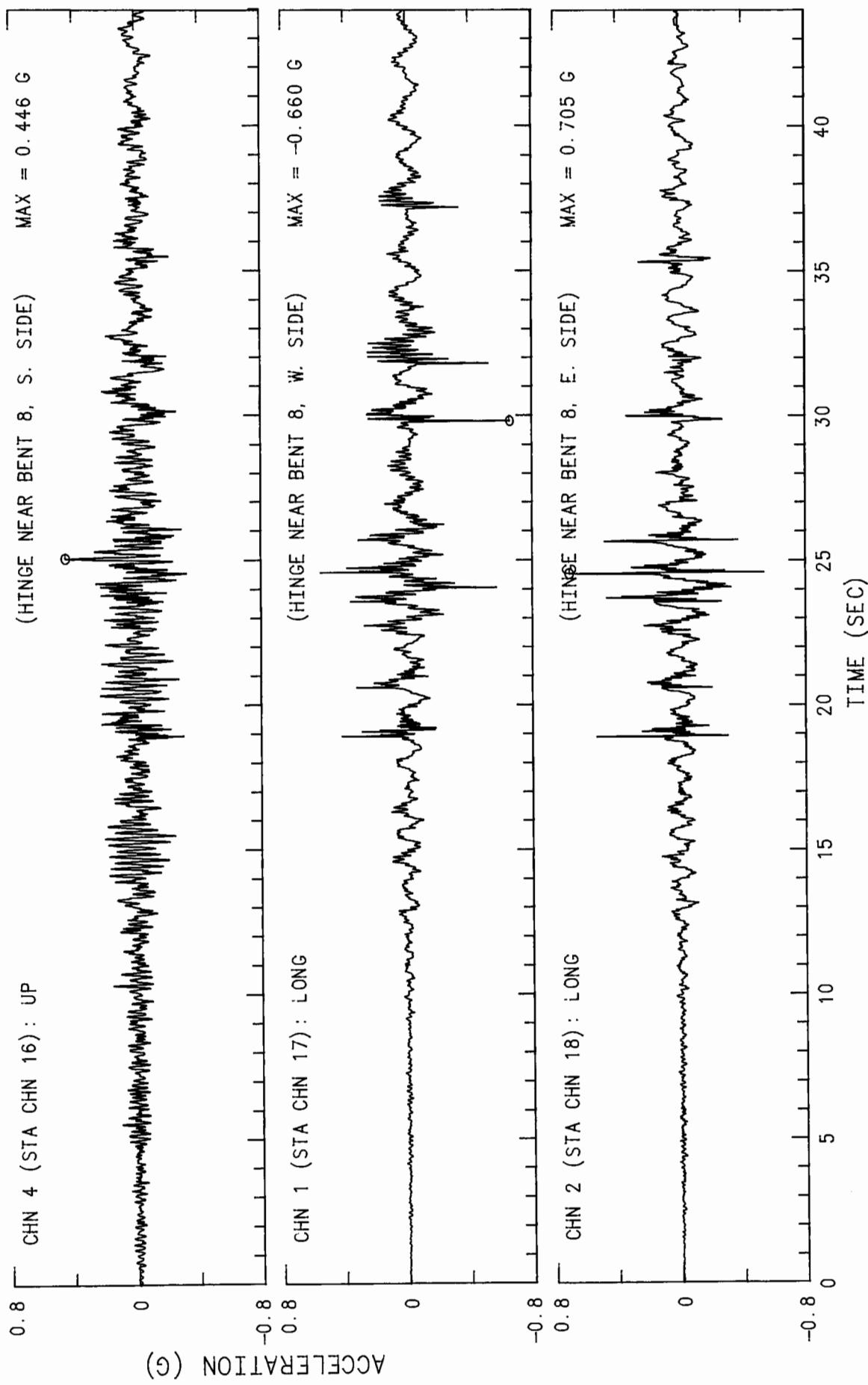
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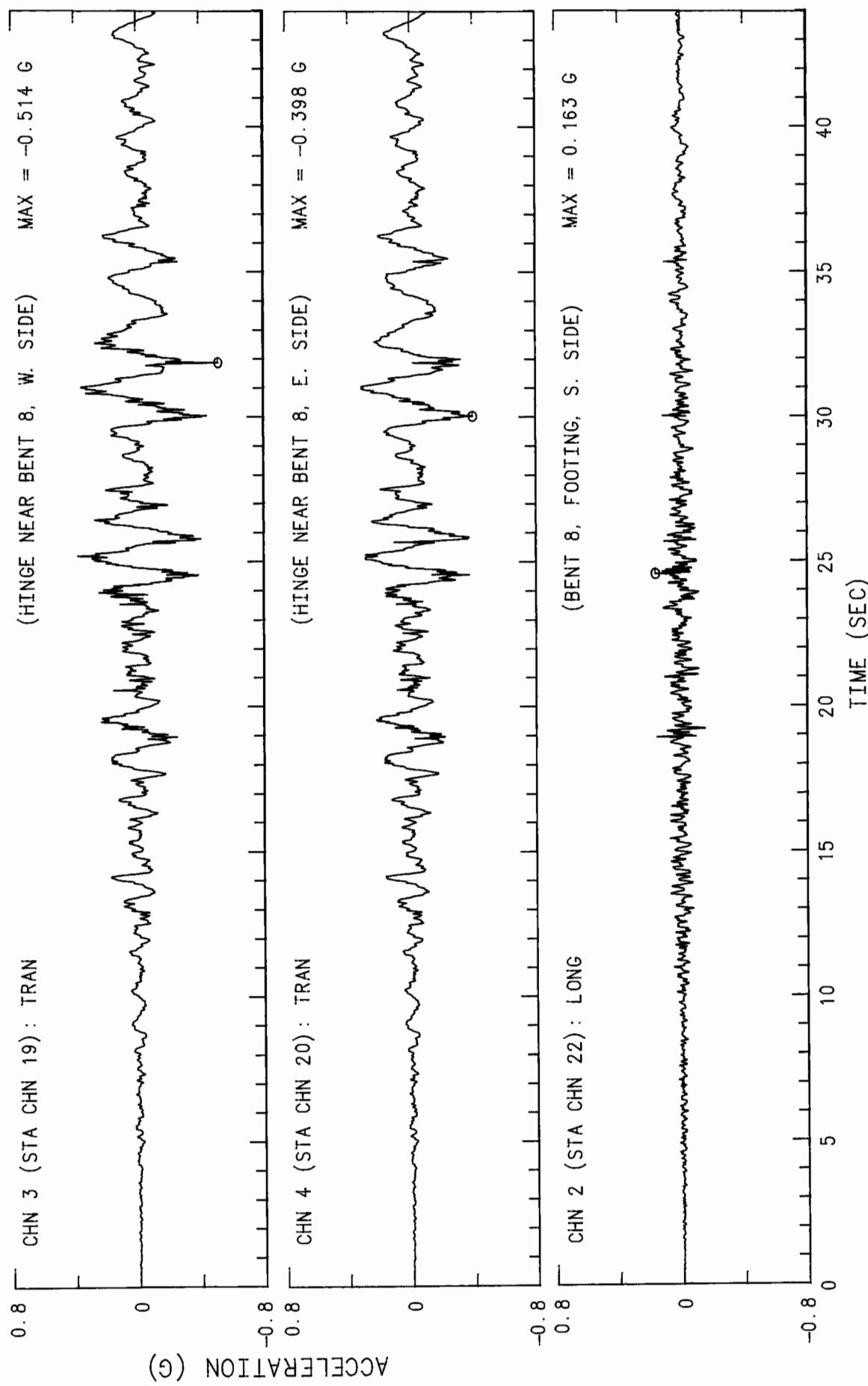
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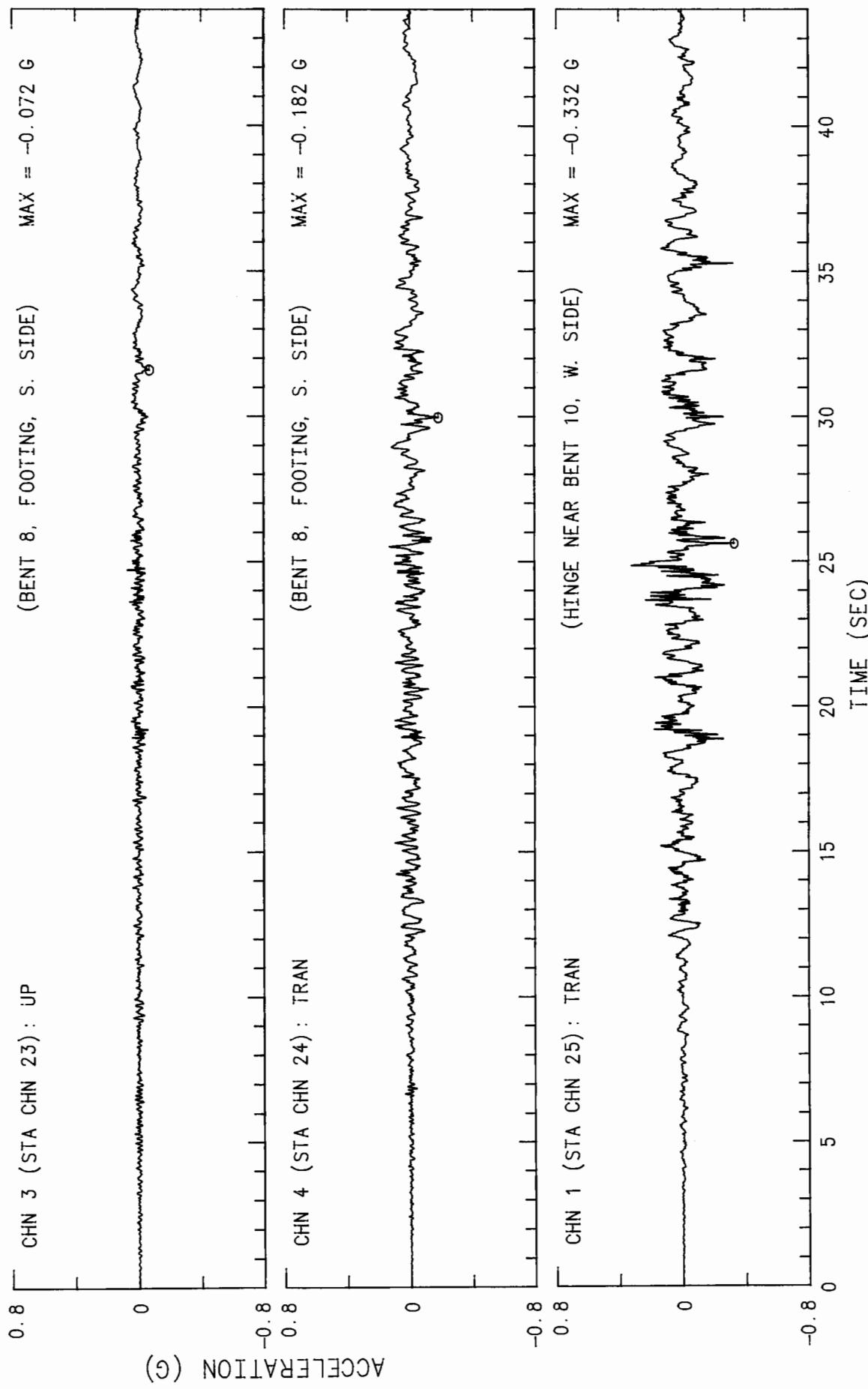
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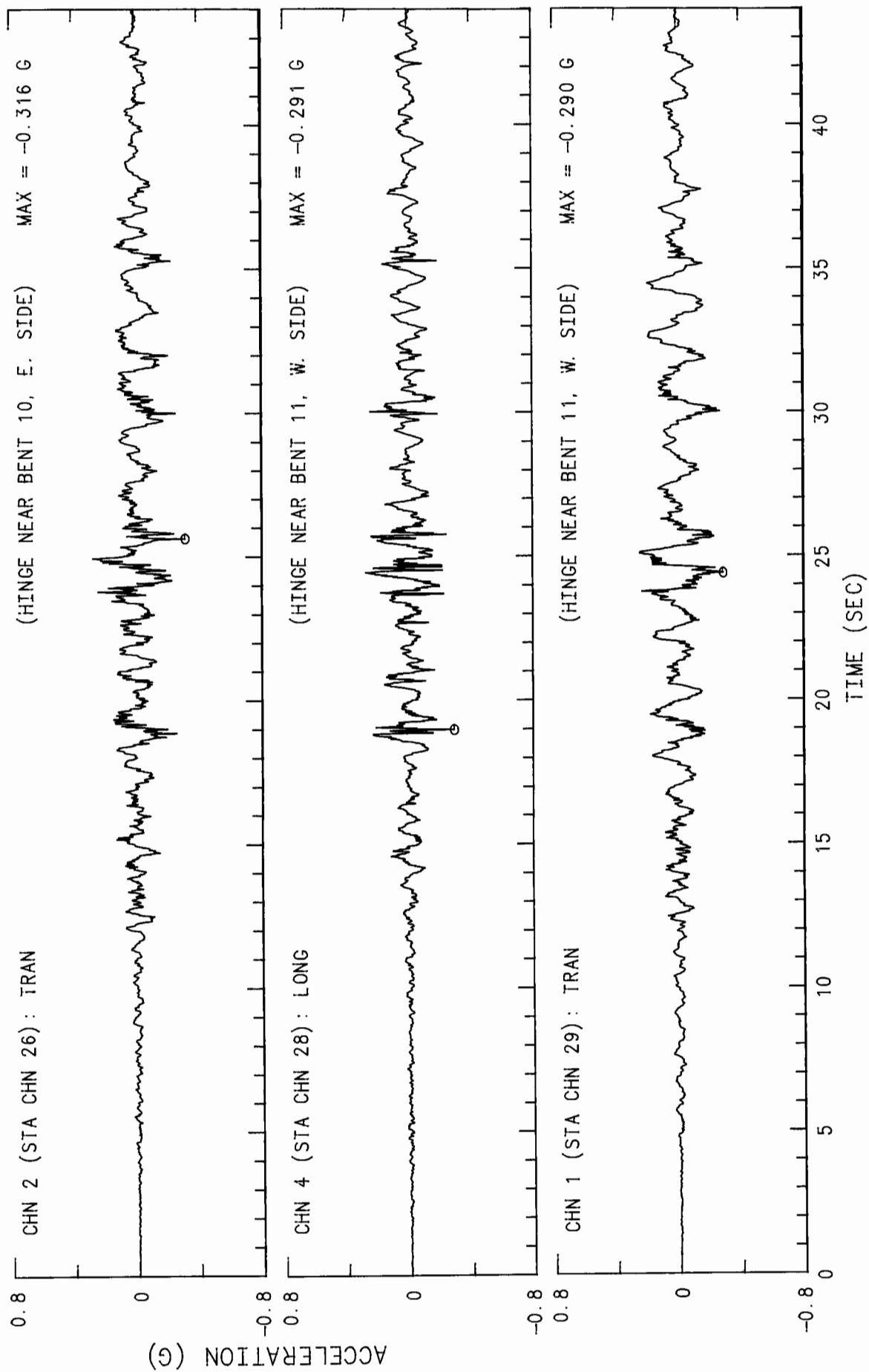
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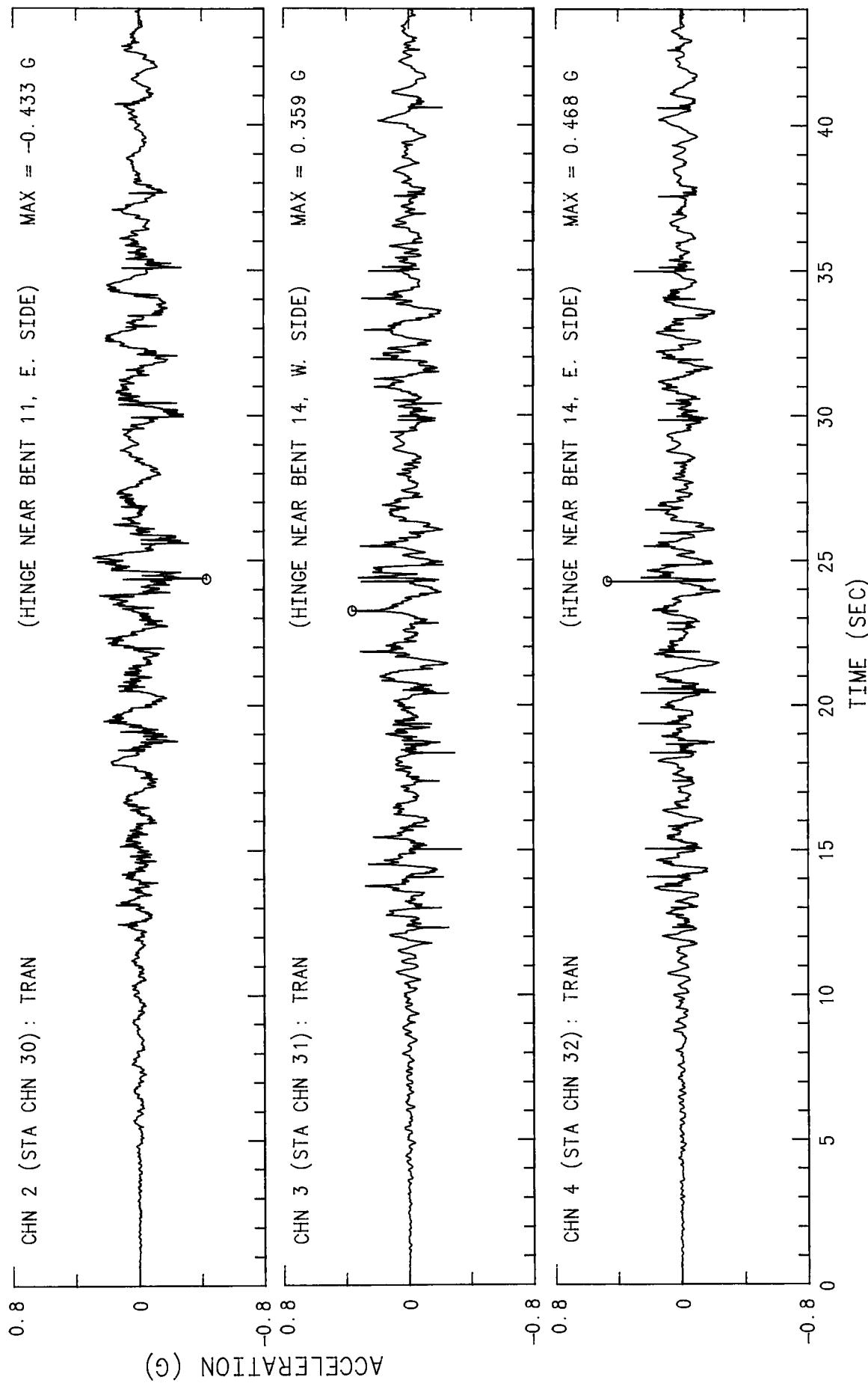
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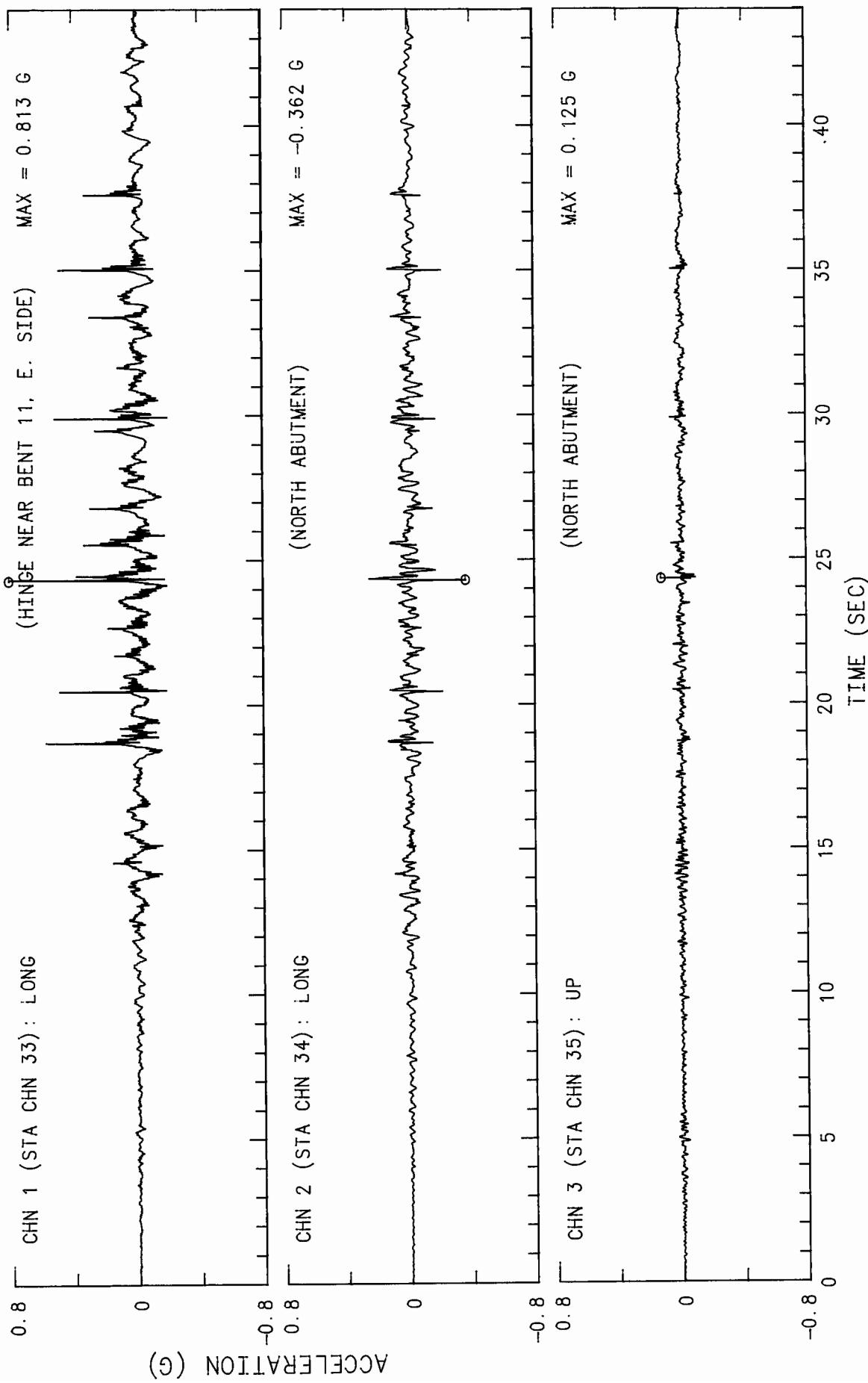
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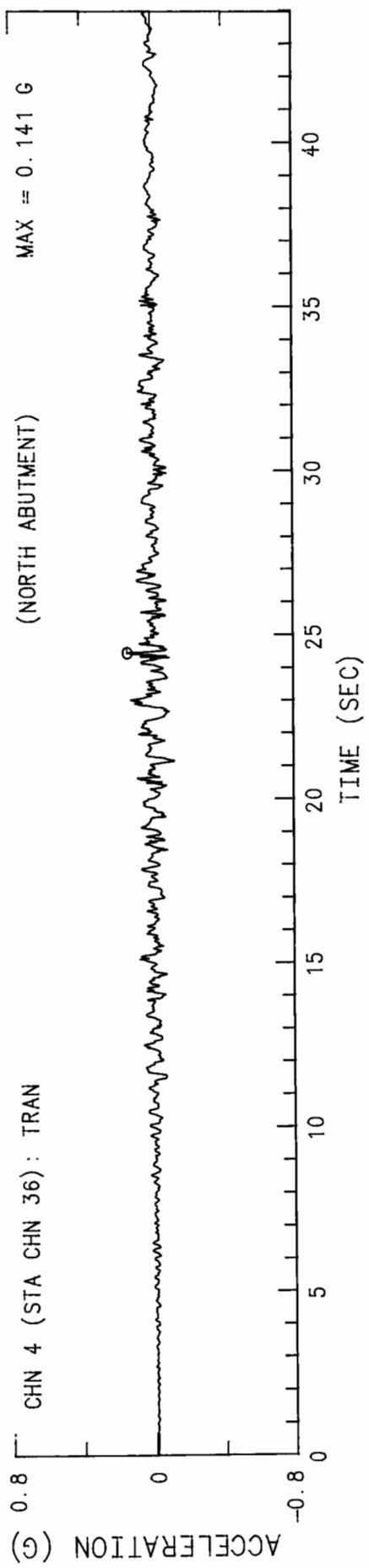
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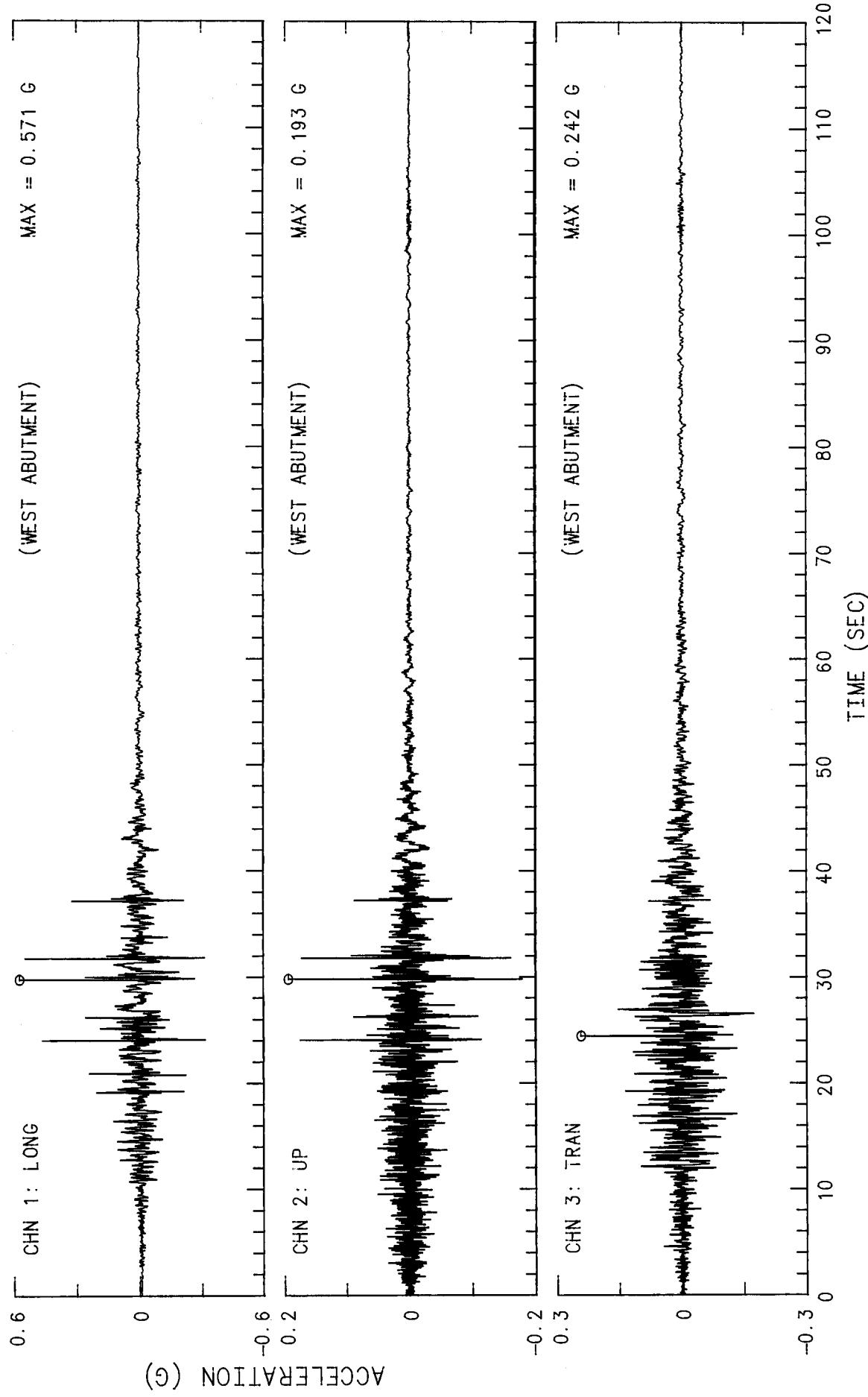
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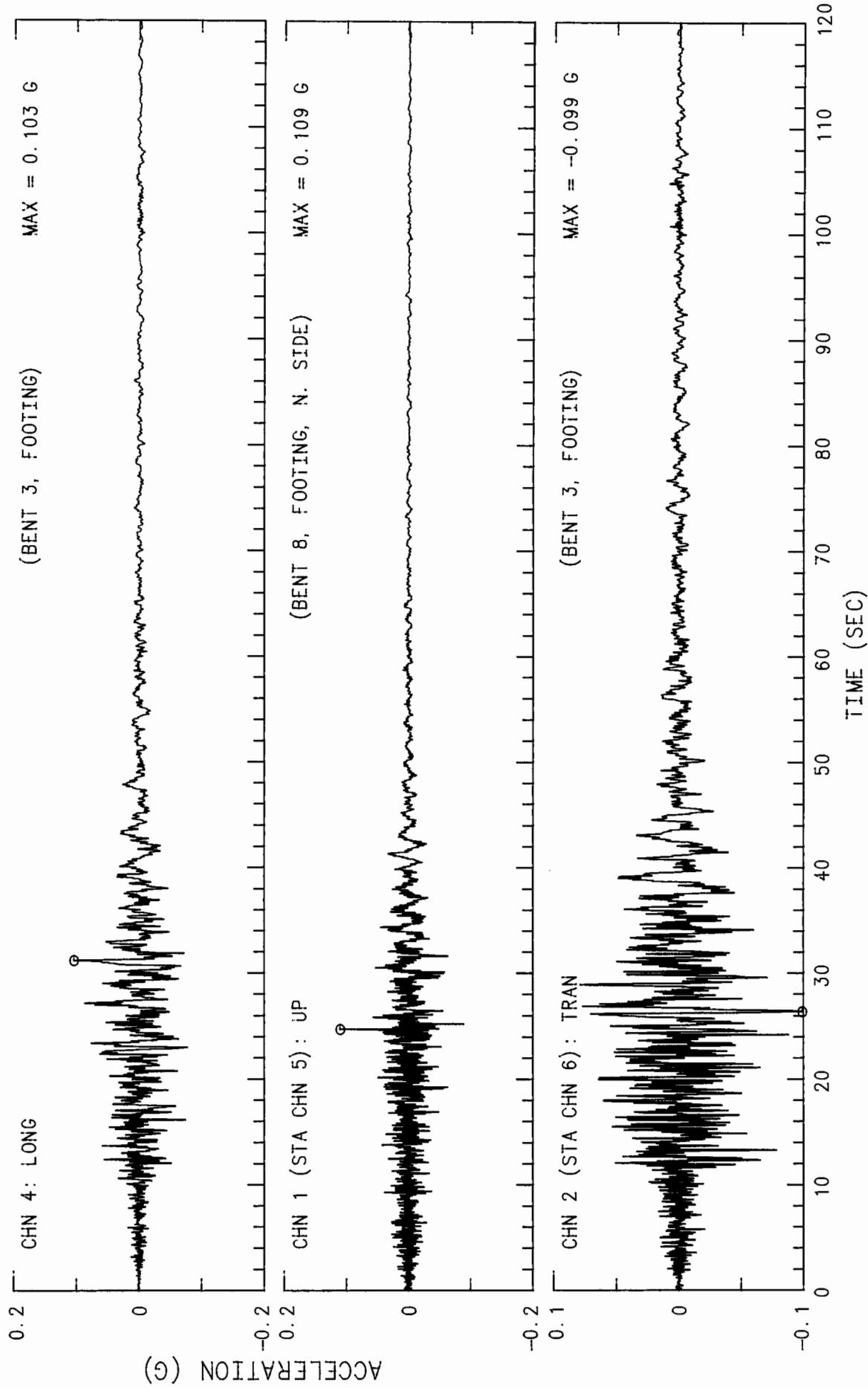
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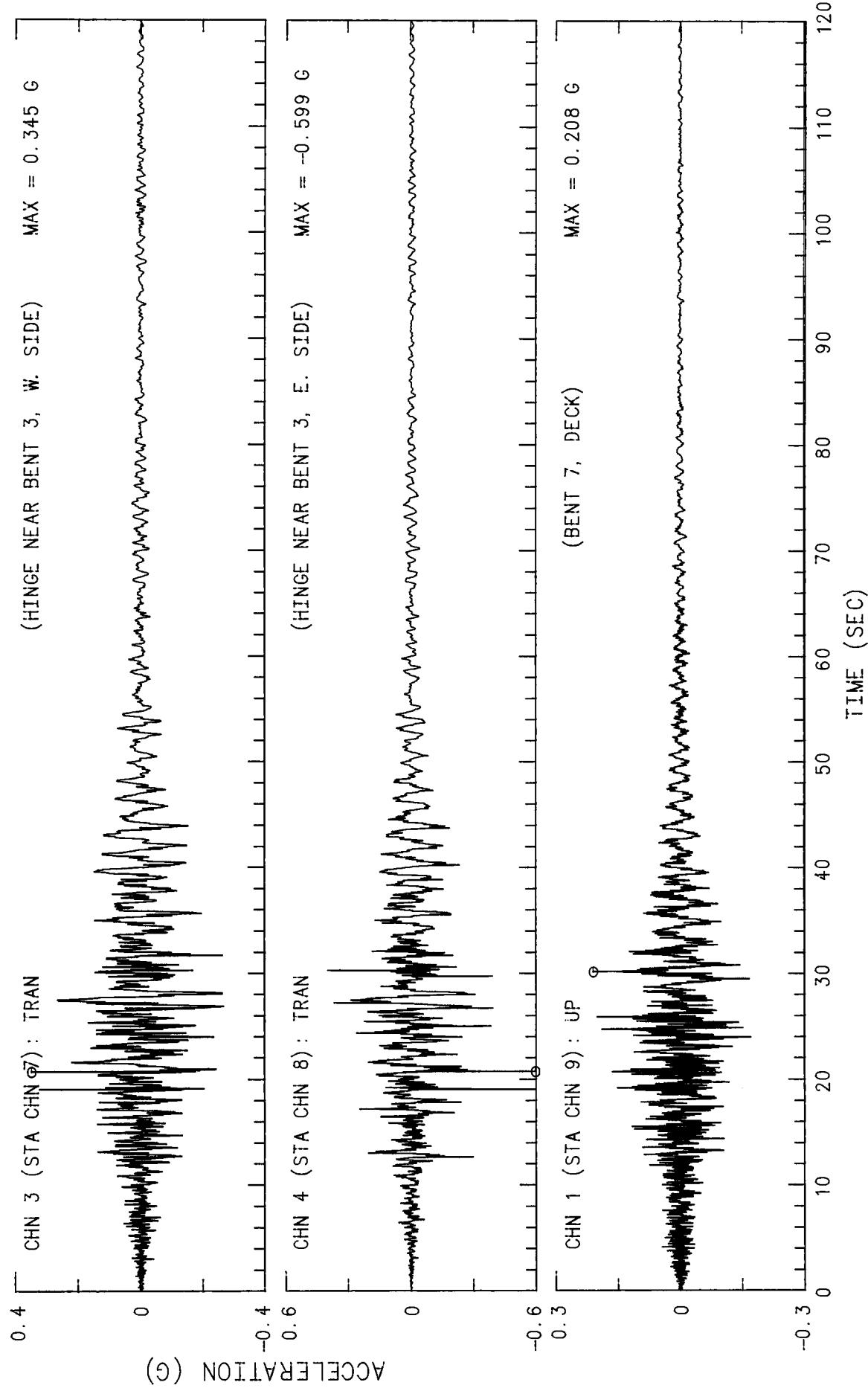
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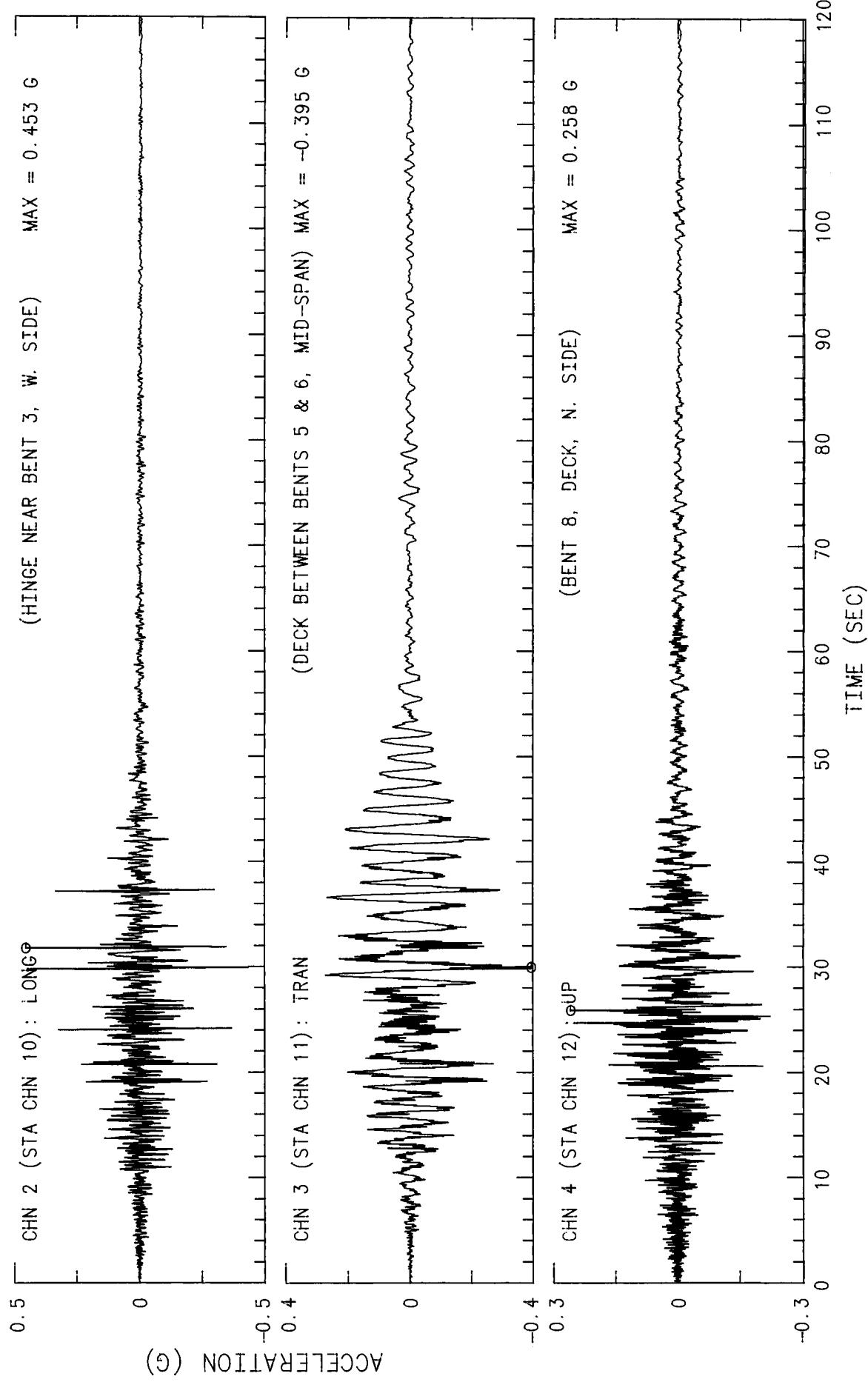
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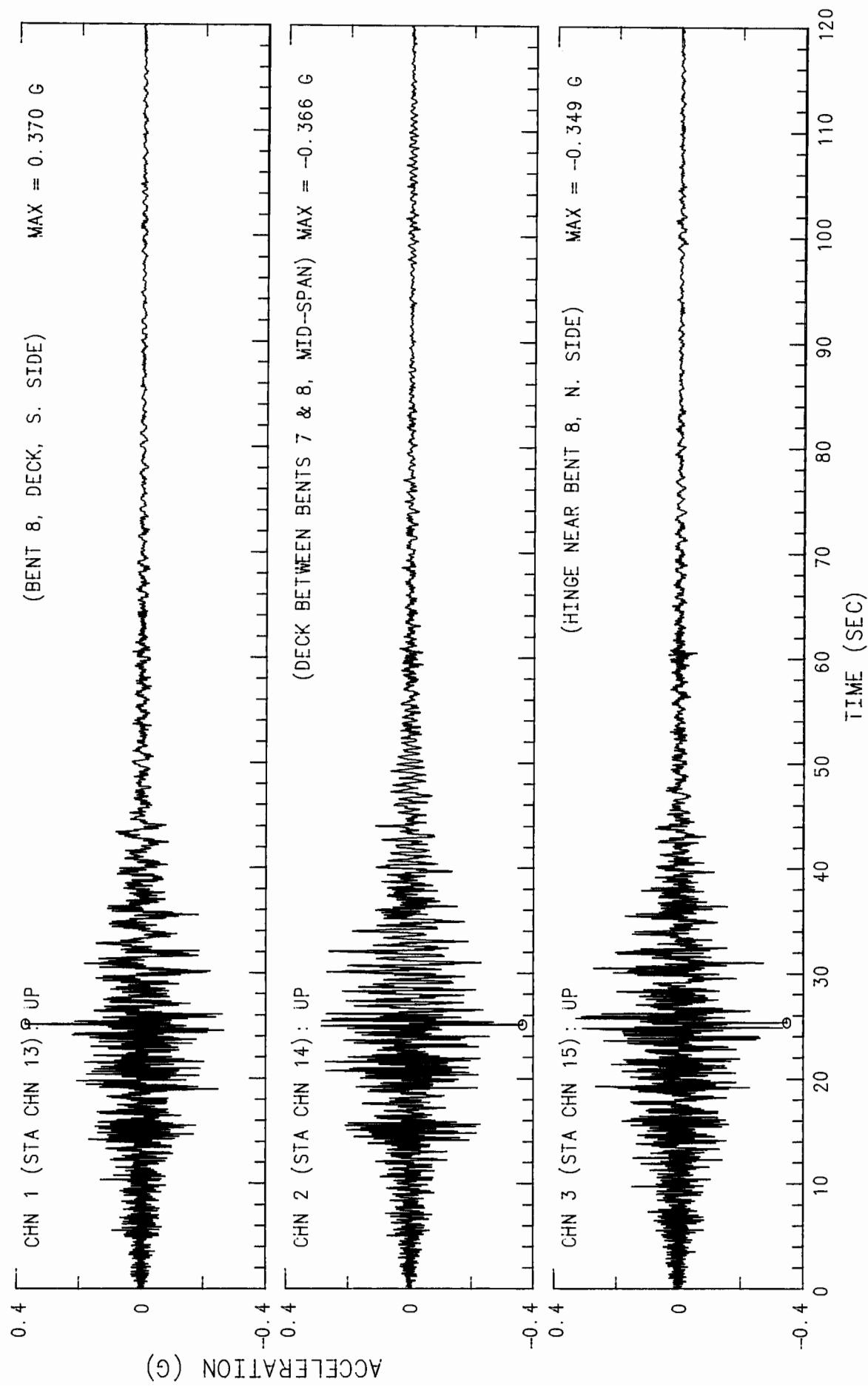
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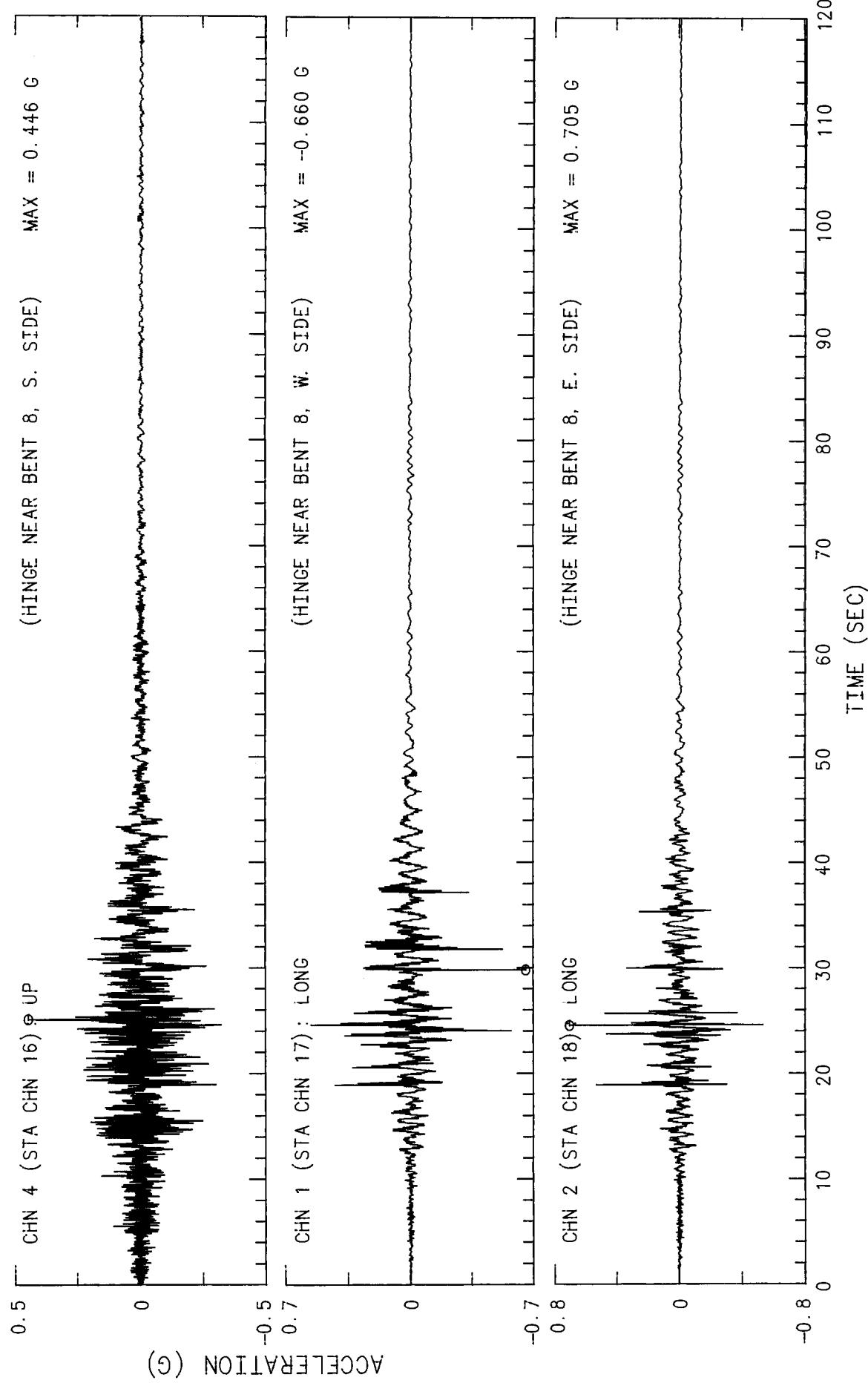
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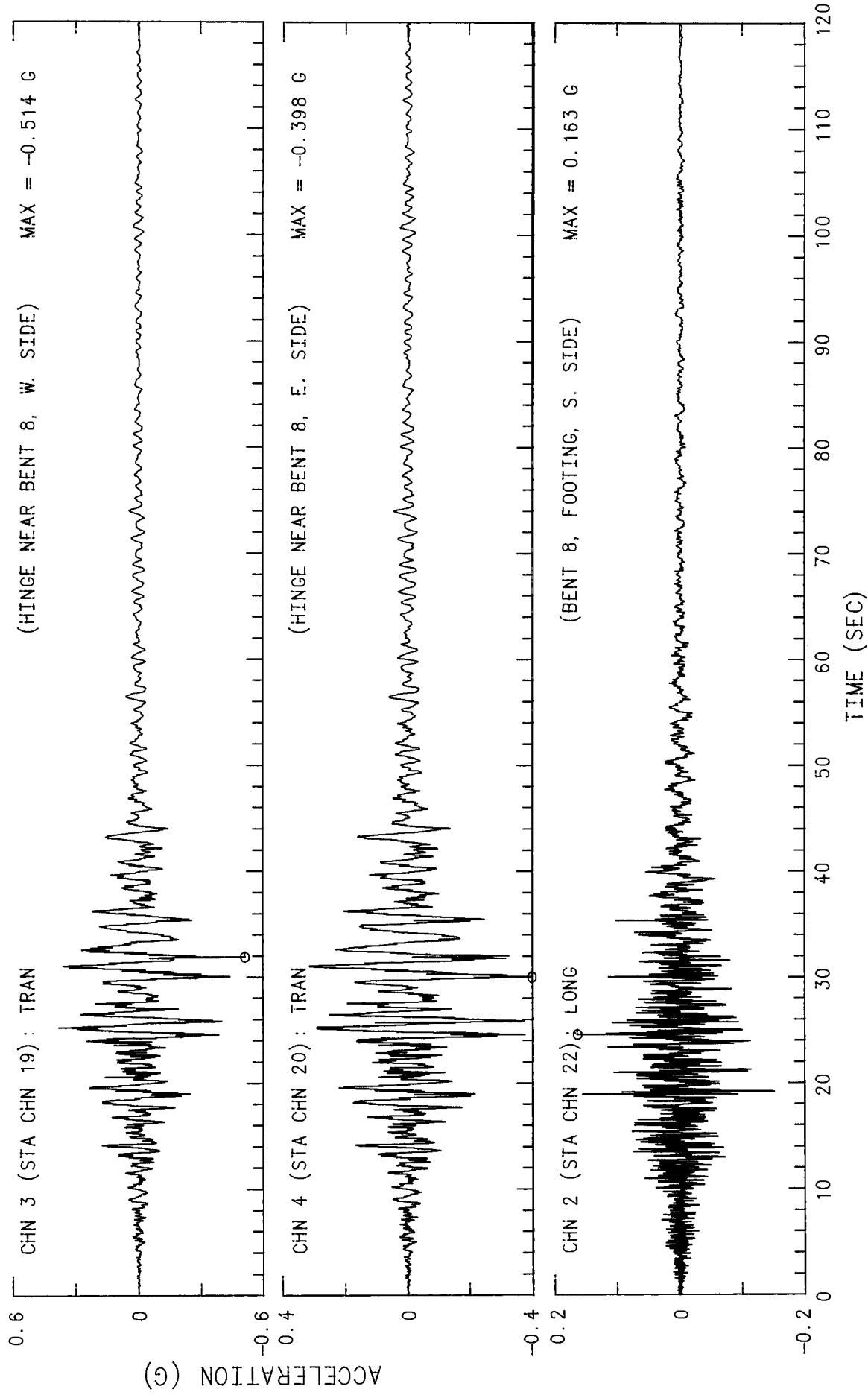
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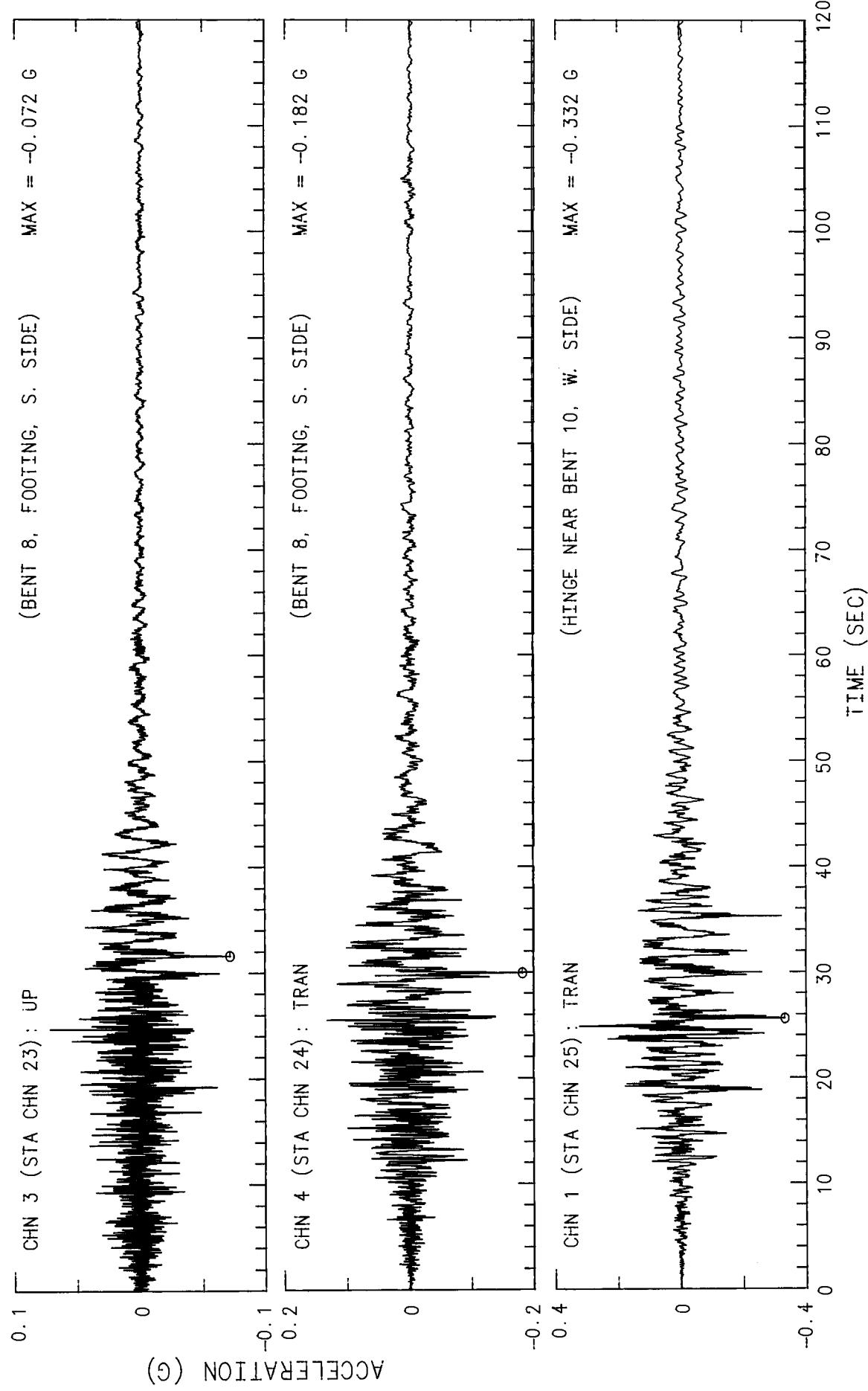
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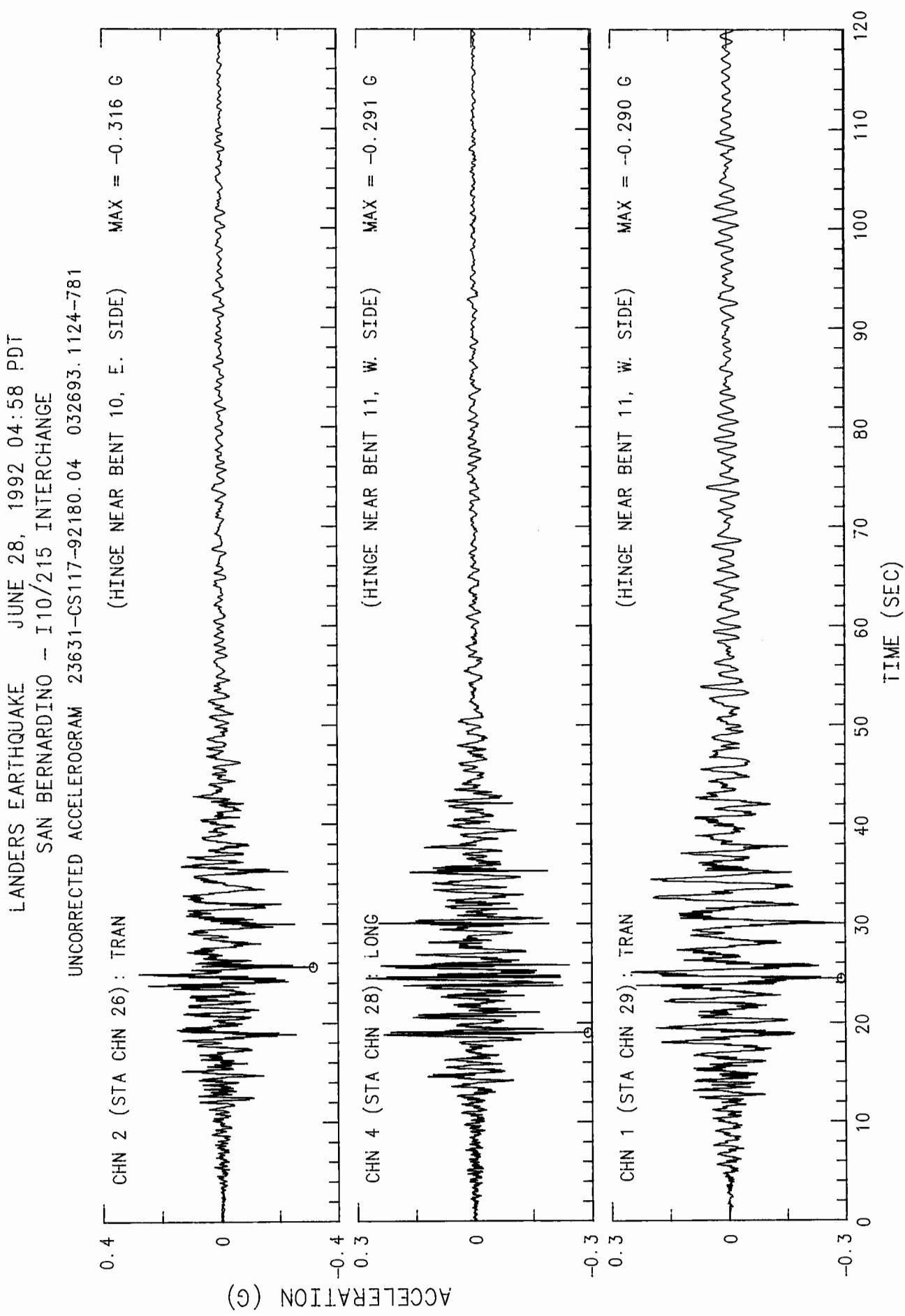


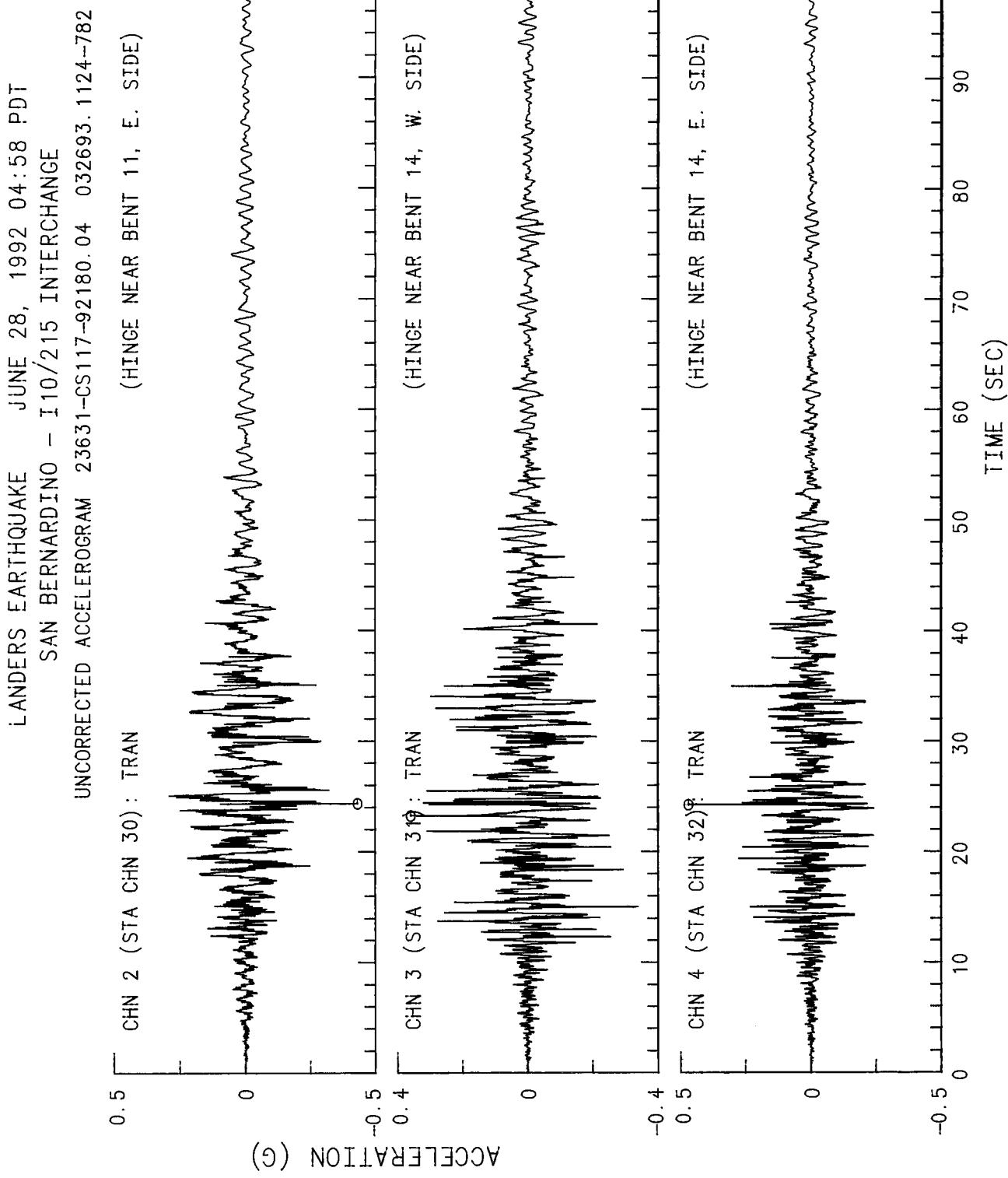
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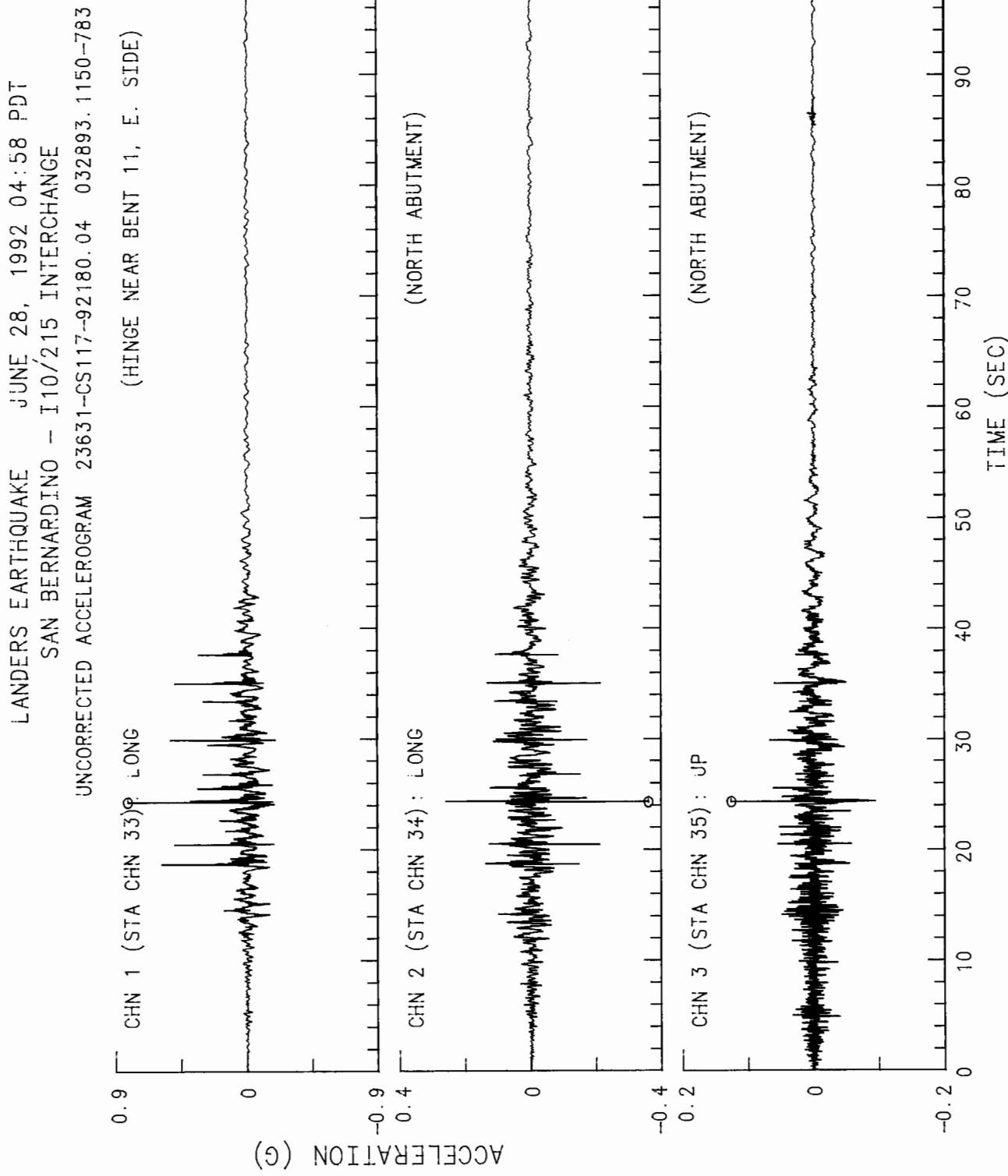


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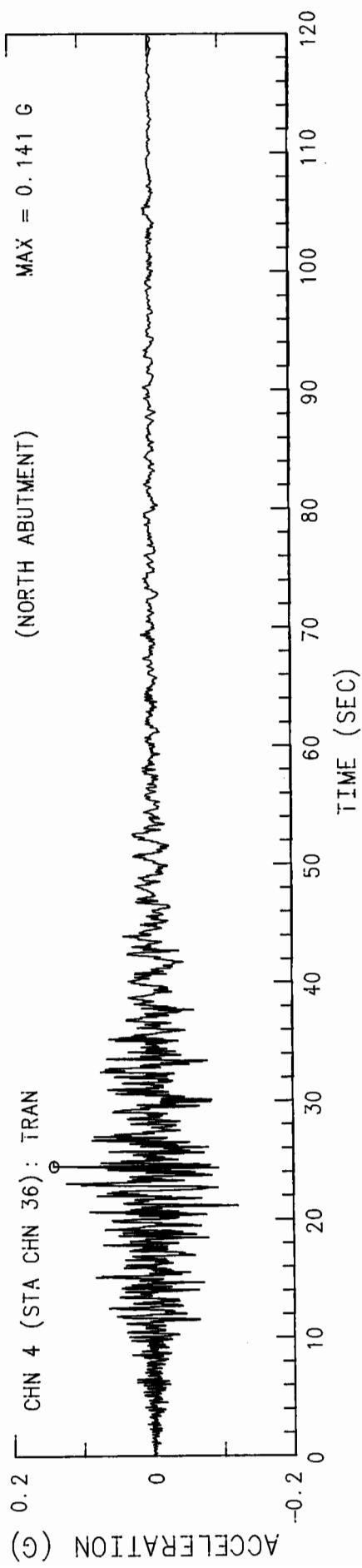




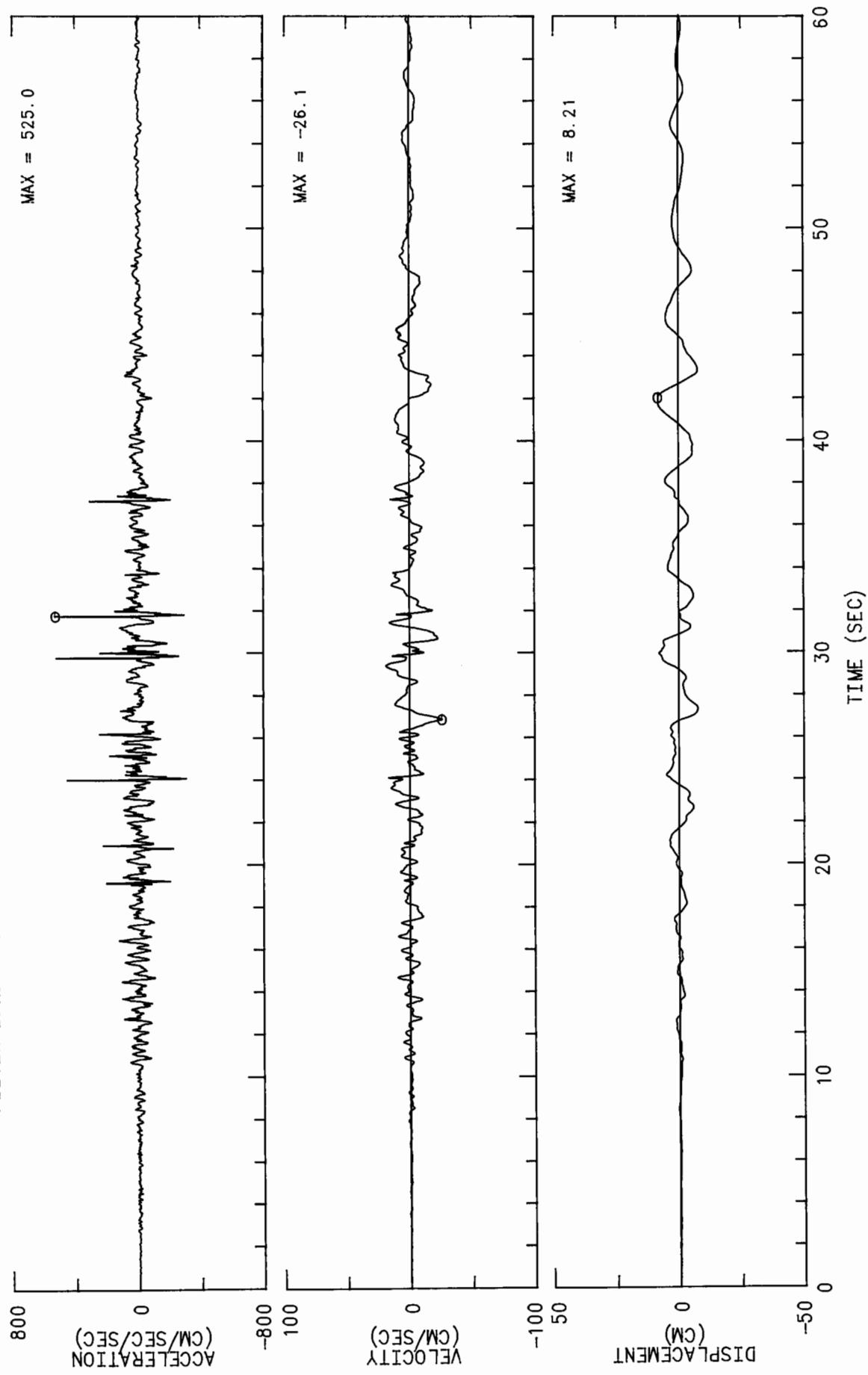




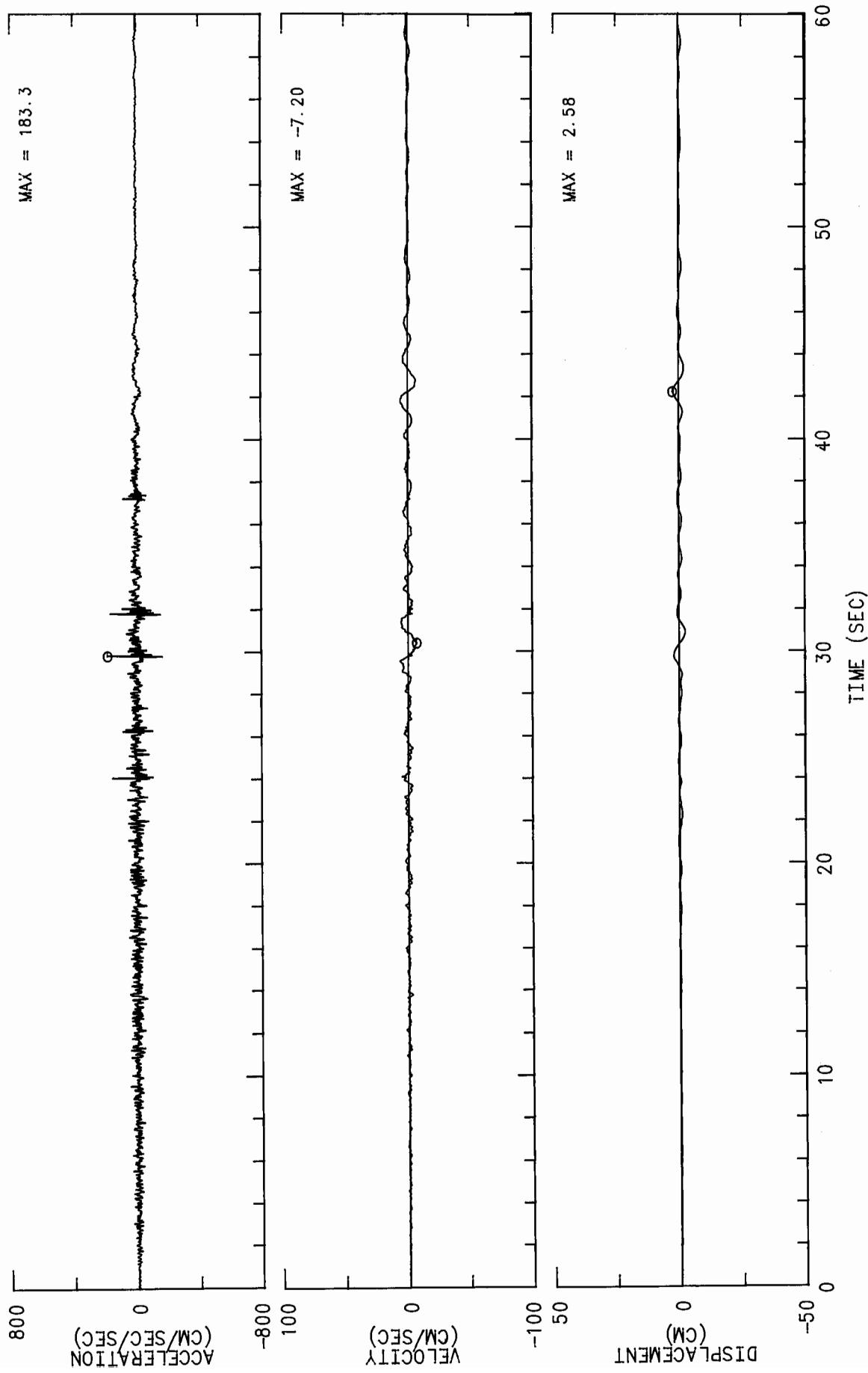
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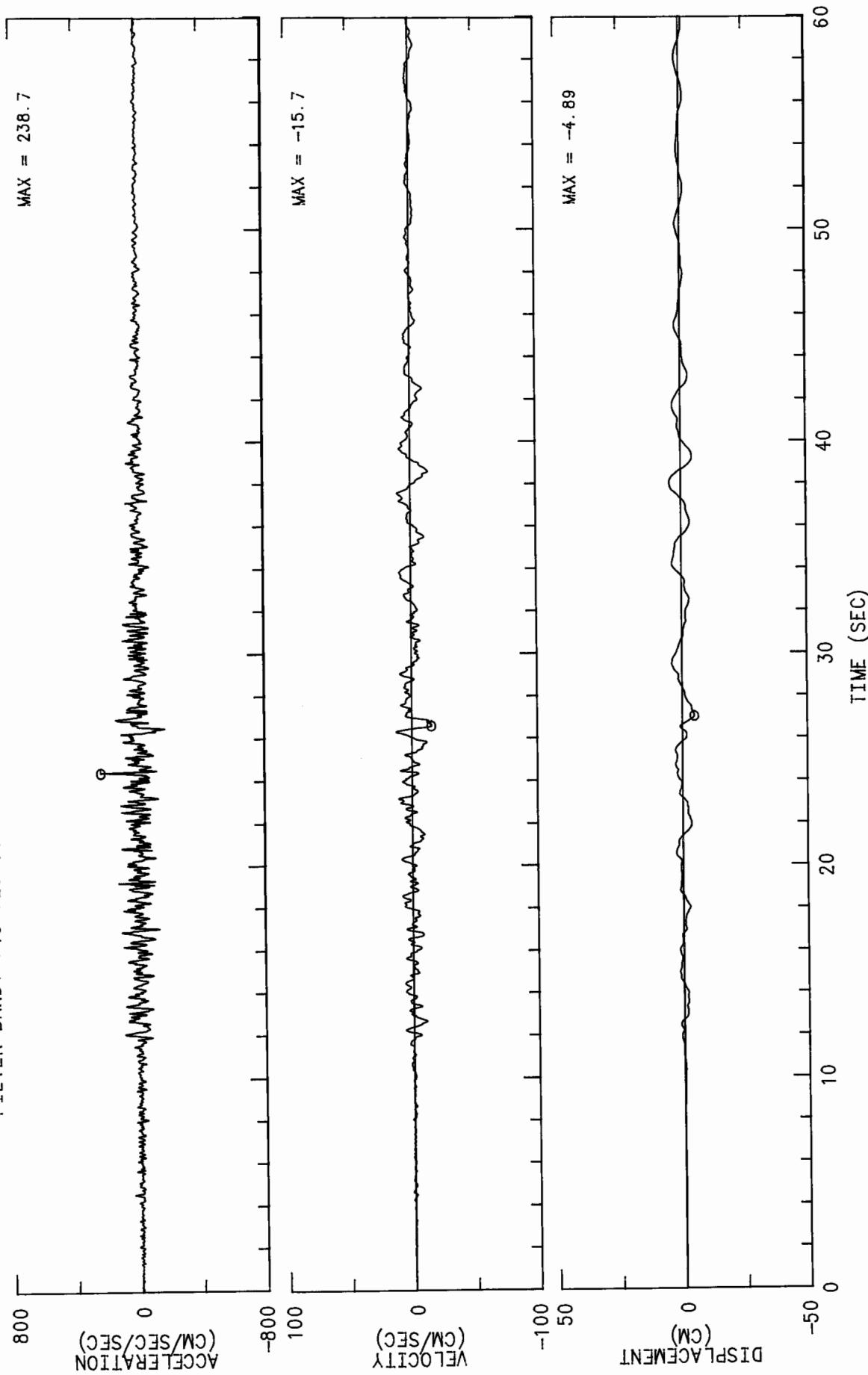
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INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
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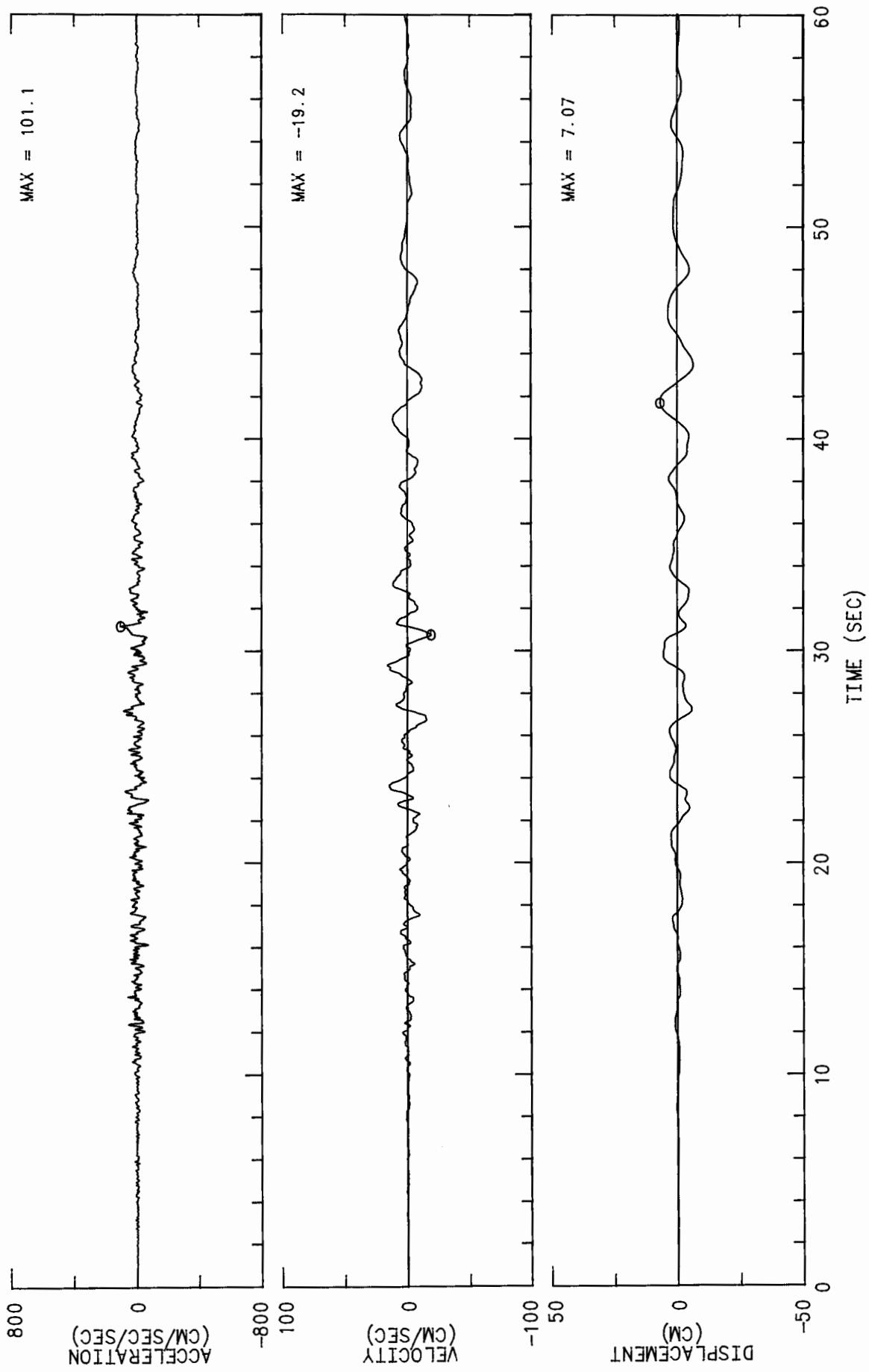
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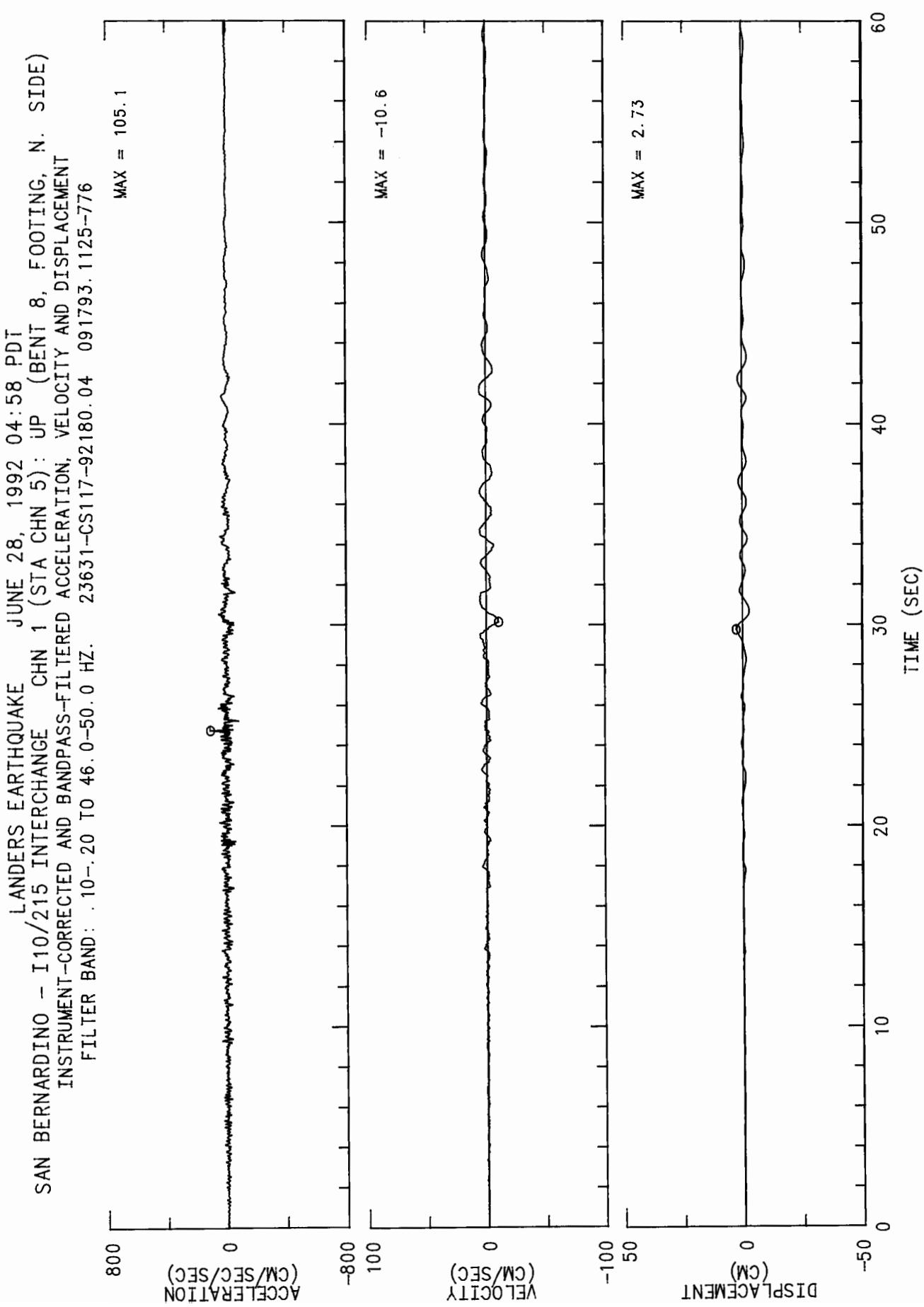


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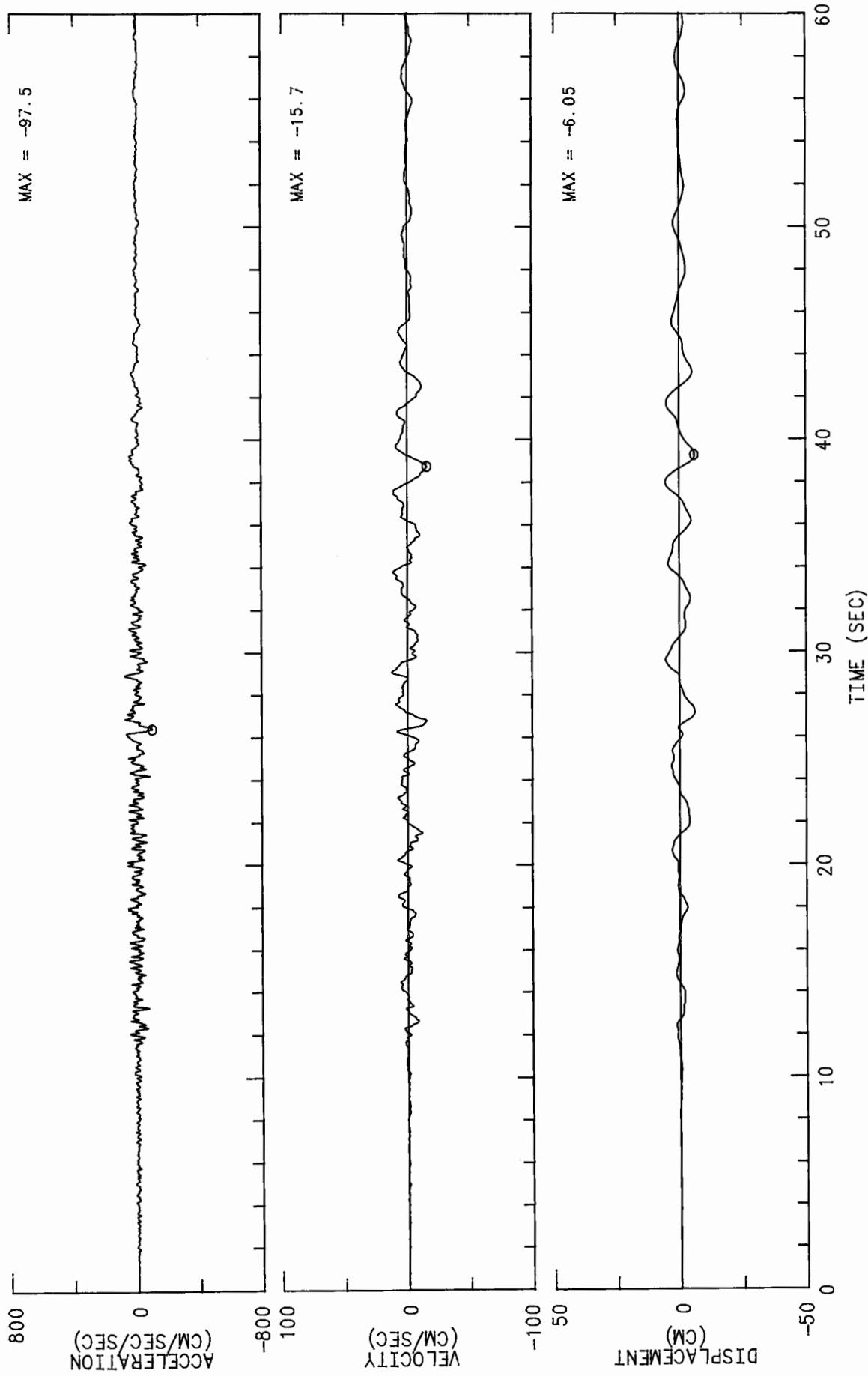


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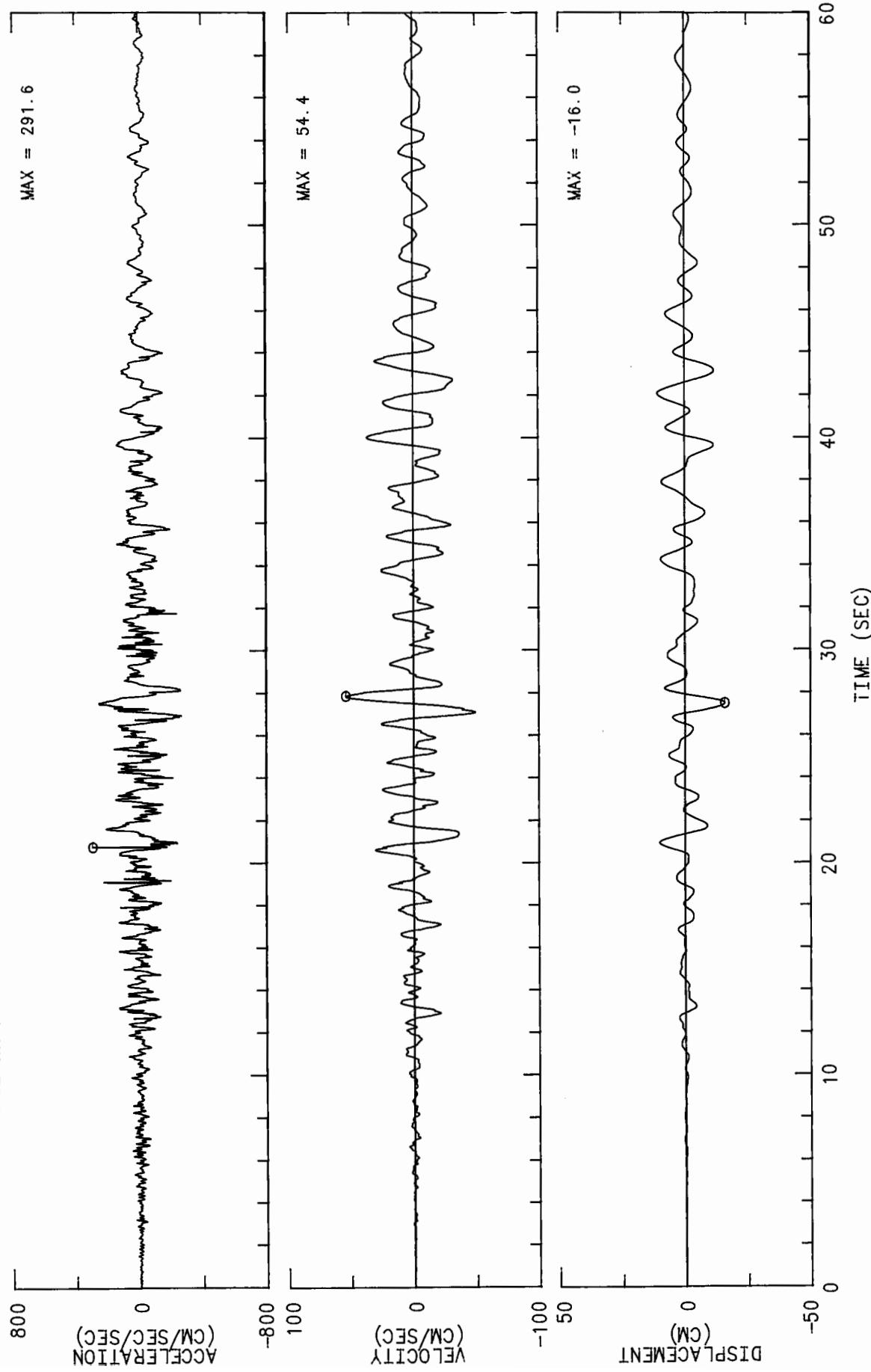




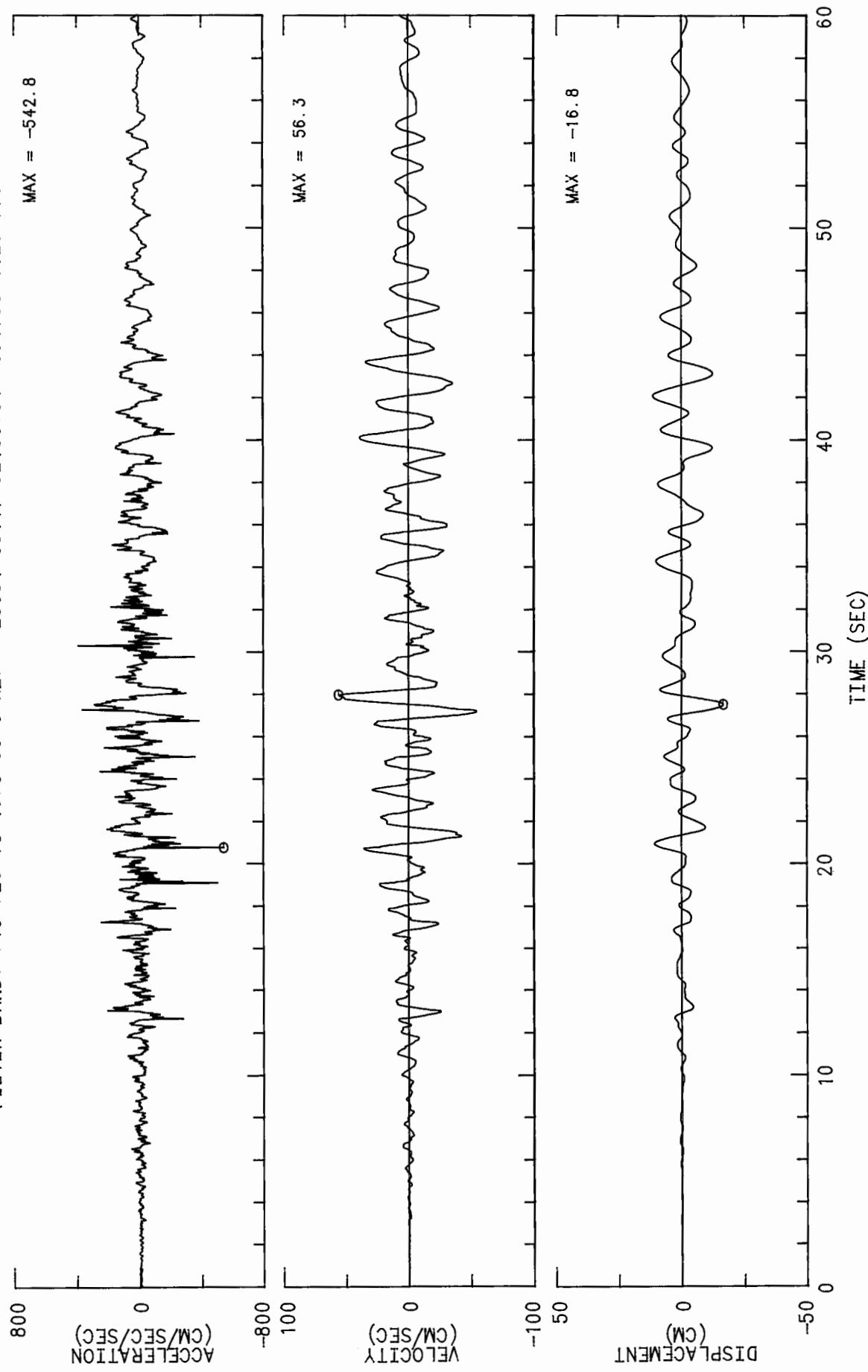
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 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-776



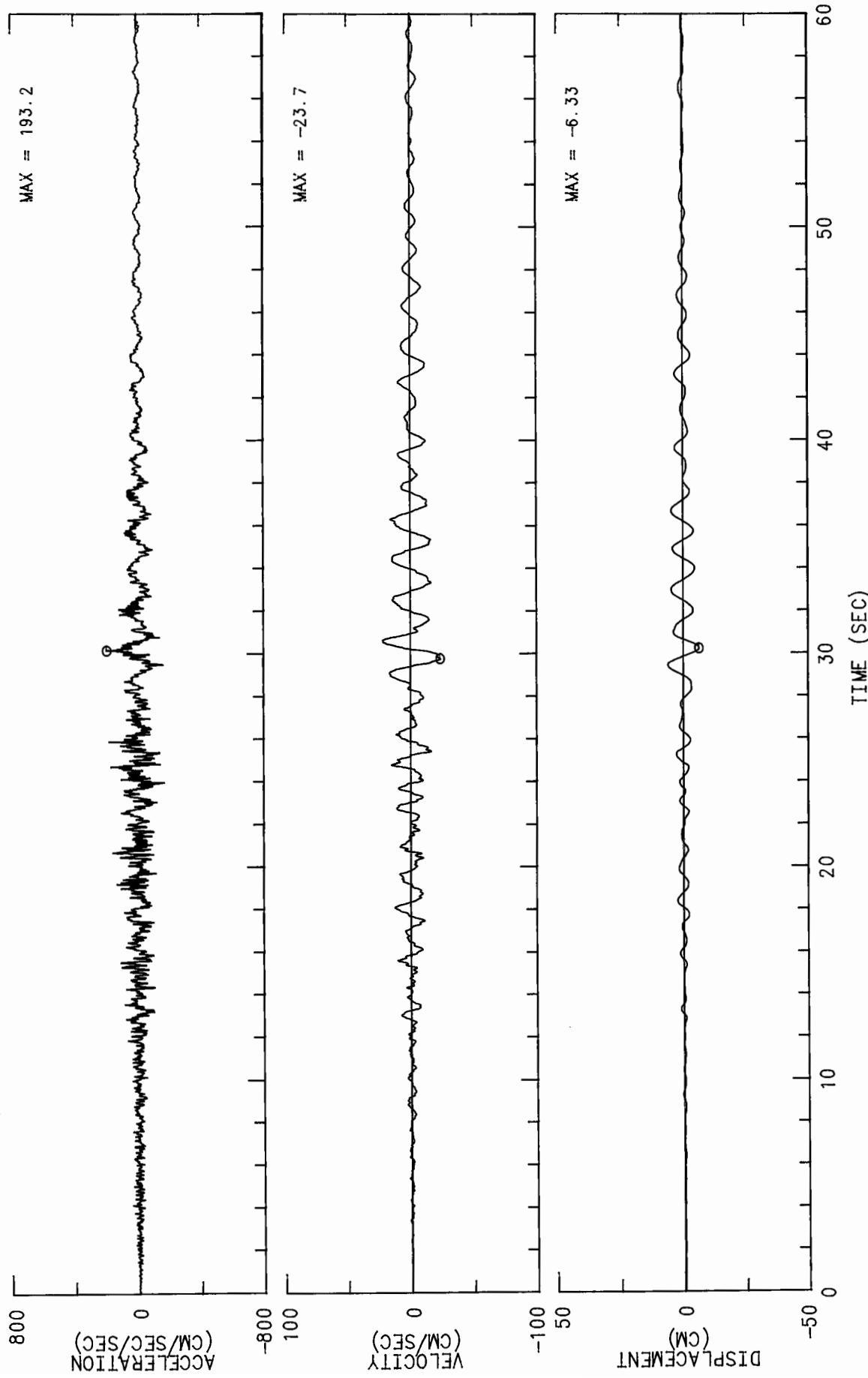
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I 10/215 INTERCHANGE CHN 3 (STA CHN 7) : TRAN (HINGE NEAR BENT 3, W. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-776



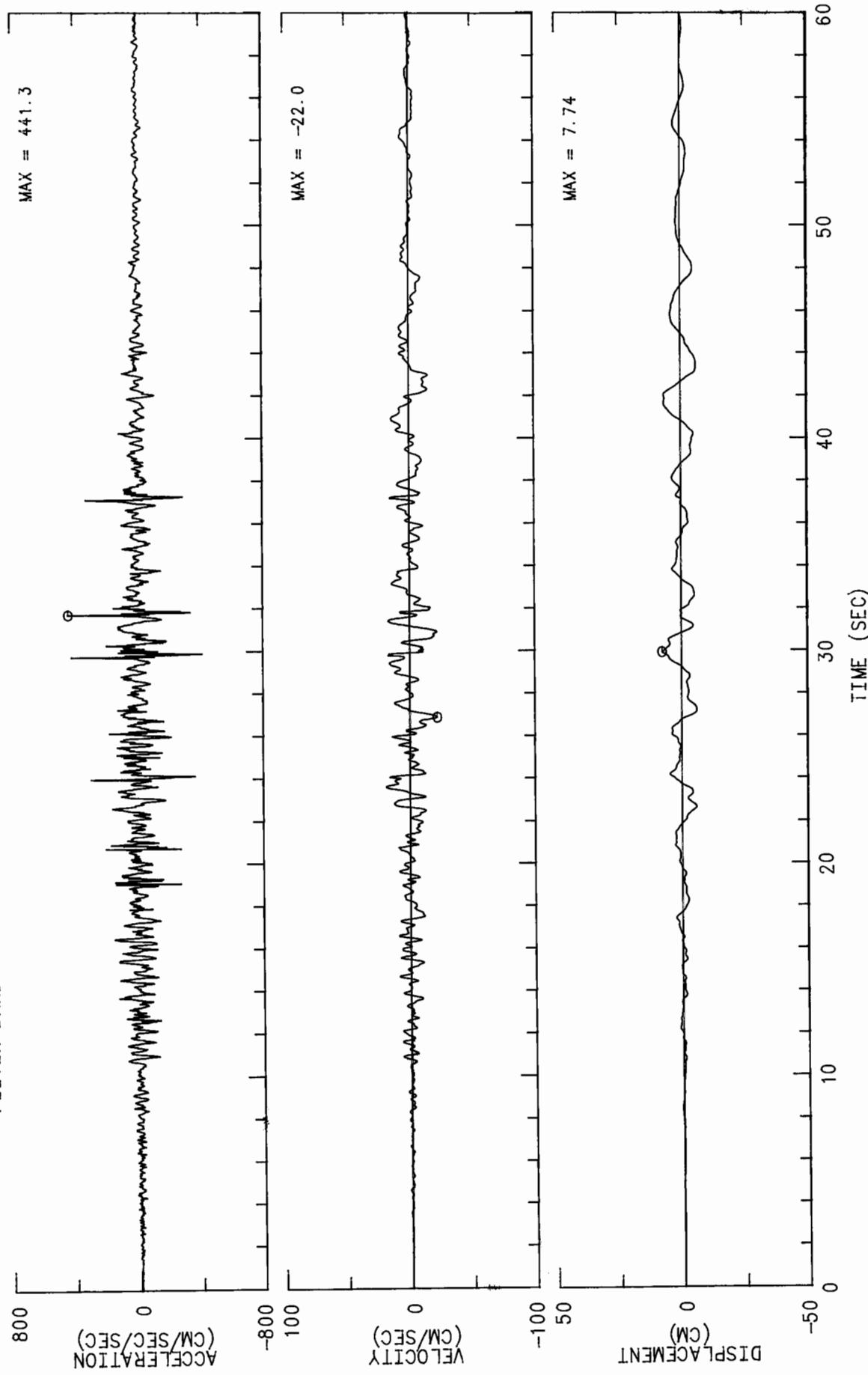
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 8): TRAN (HINGE NEAR BENT 3, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-776



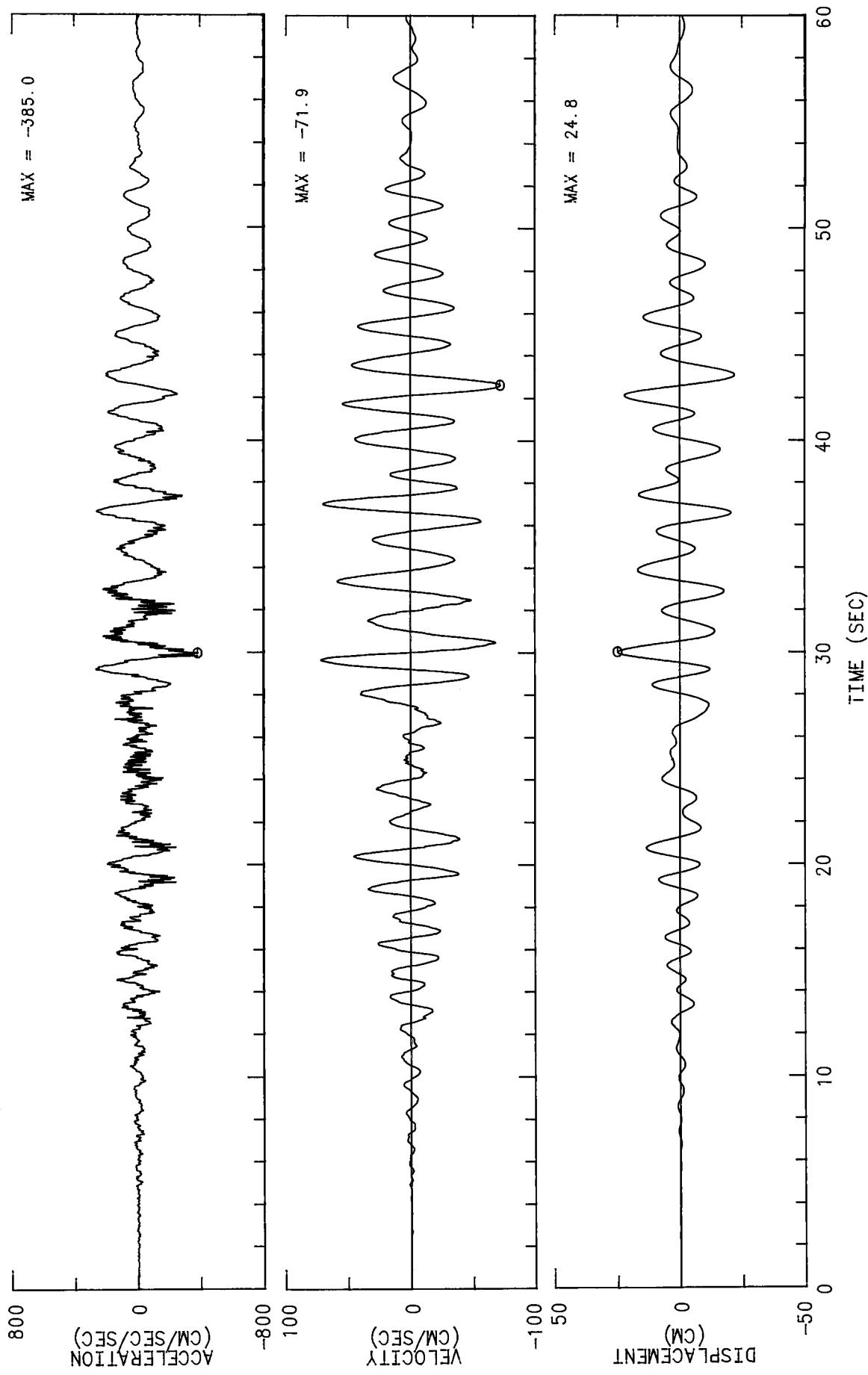
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 9) : UP (BENT 7, DECK)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-777



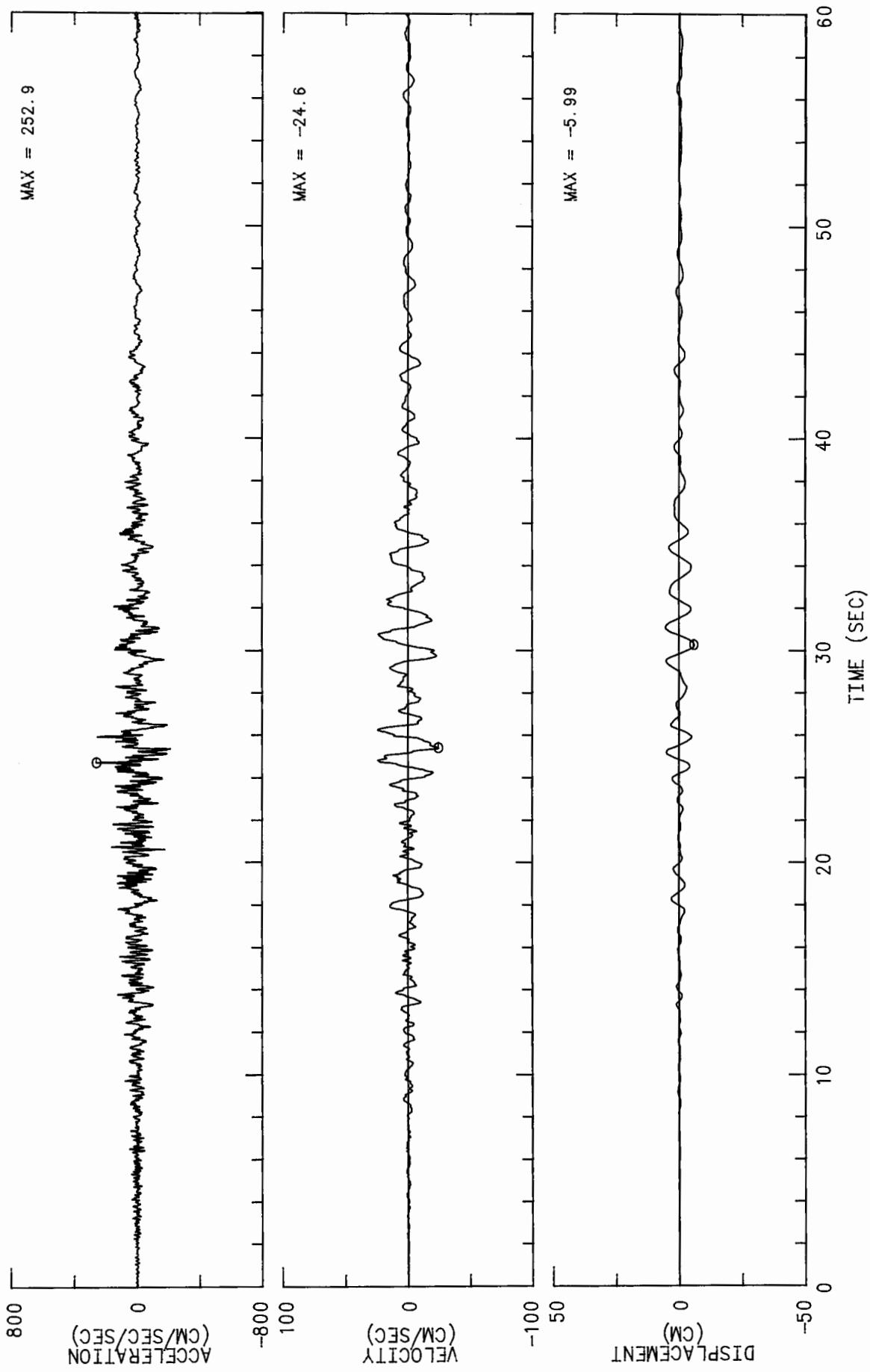
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 10): LONG (HINGE NEAR BENT 3, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-777



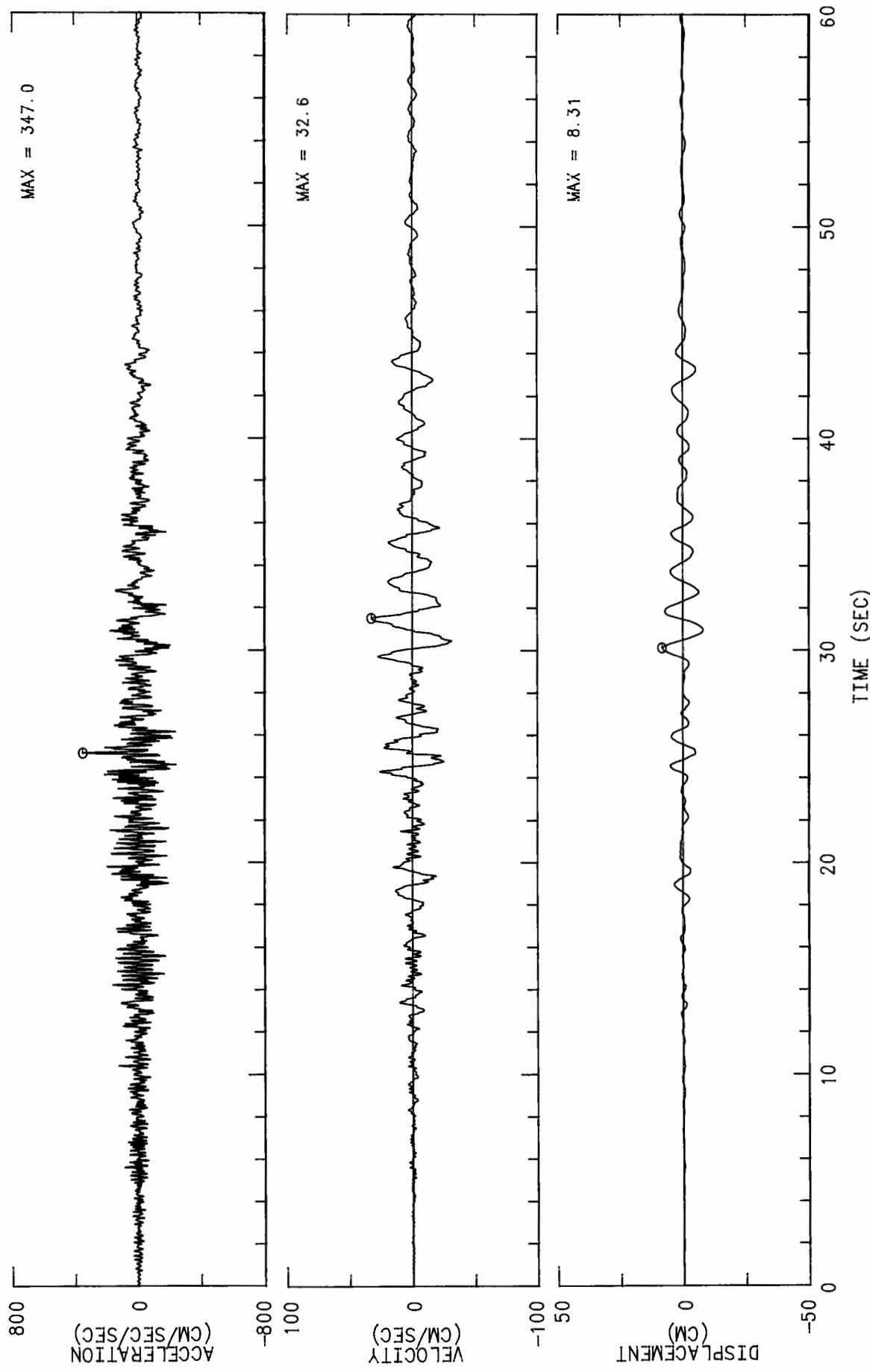
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 11): TRAN (DECK BETWEEN BENTS 5 & 6, MID-SPAN)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-777



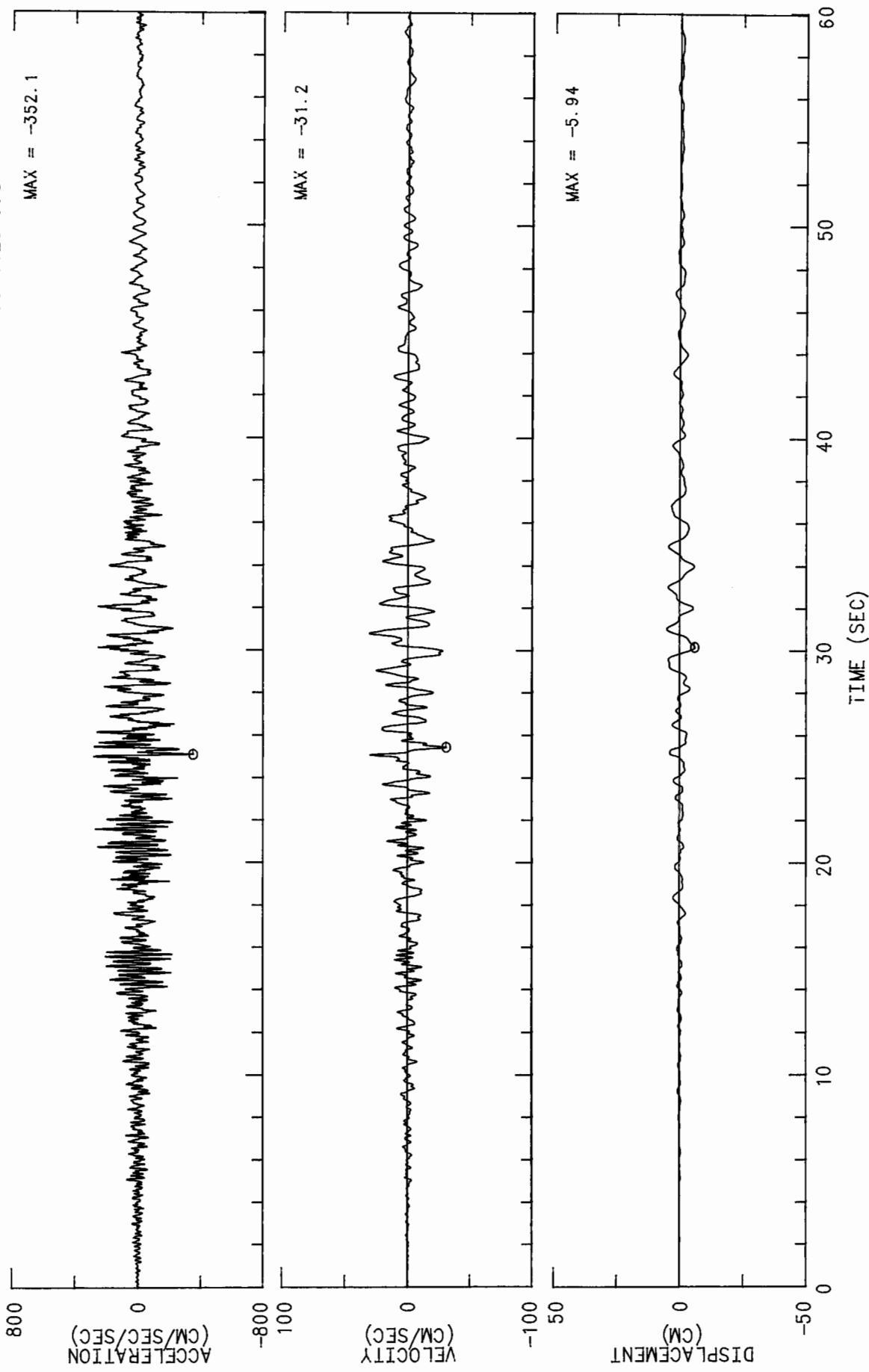
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 12) : UP (BENT 8, DECK, N. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-777



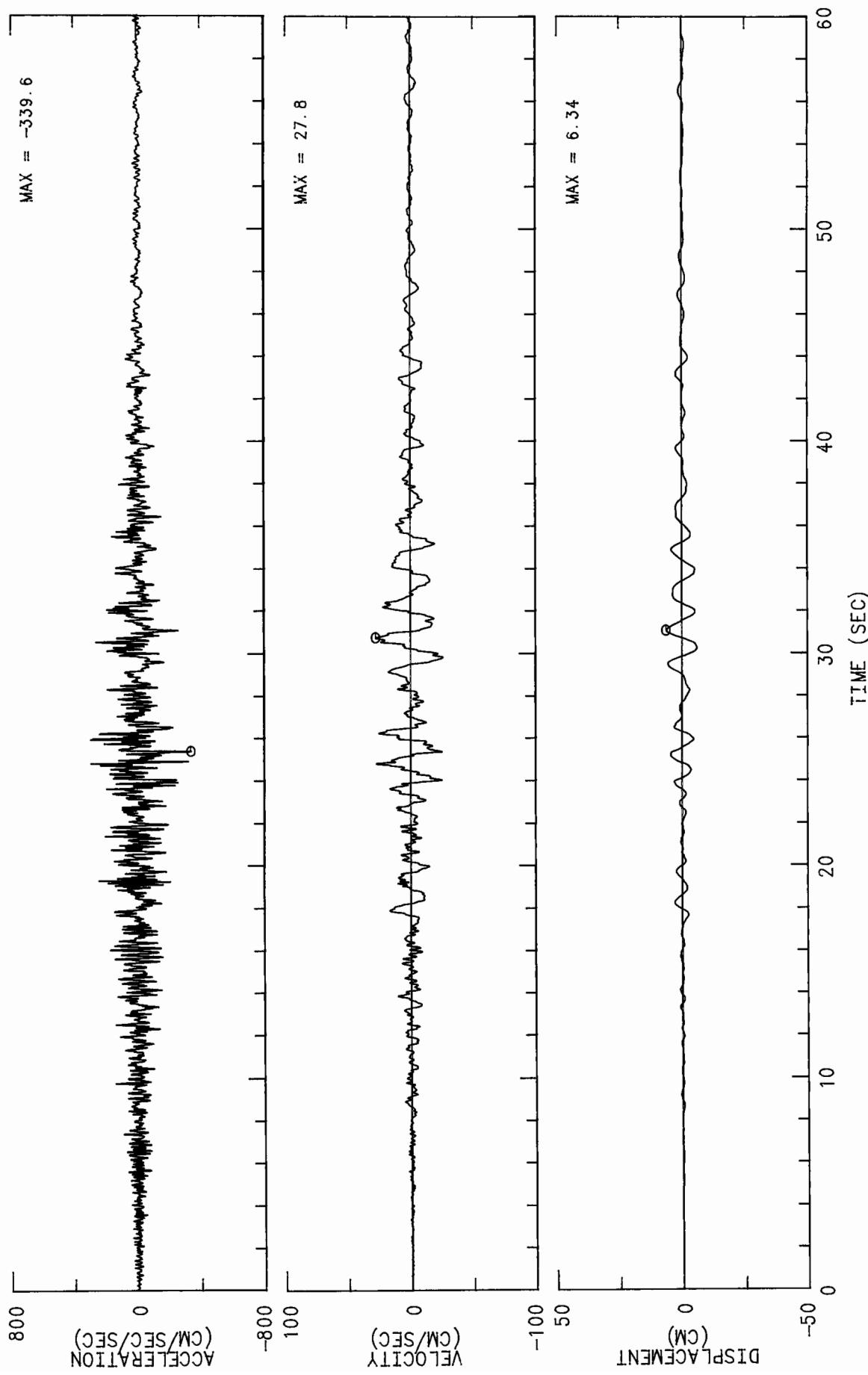
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I 10/215 INTERCHANGE CHN 1 (STA CHN 13) : UP (BENT 8, DECK, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-778



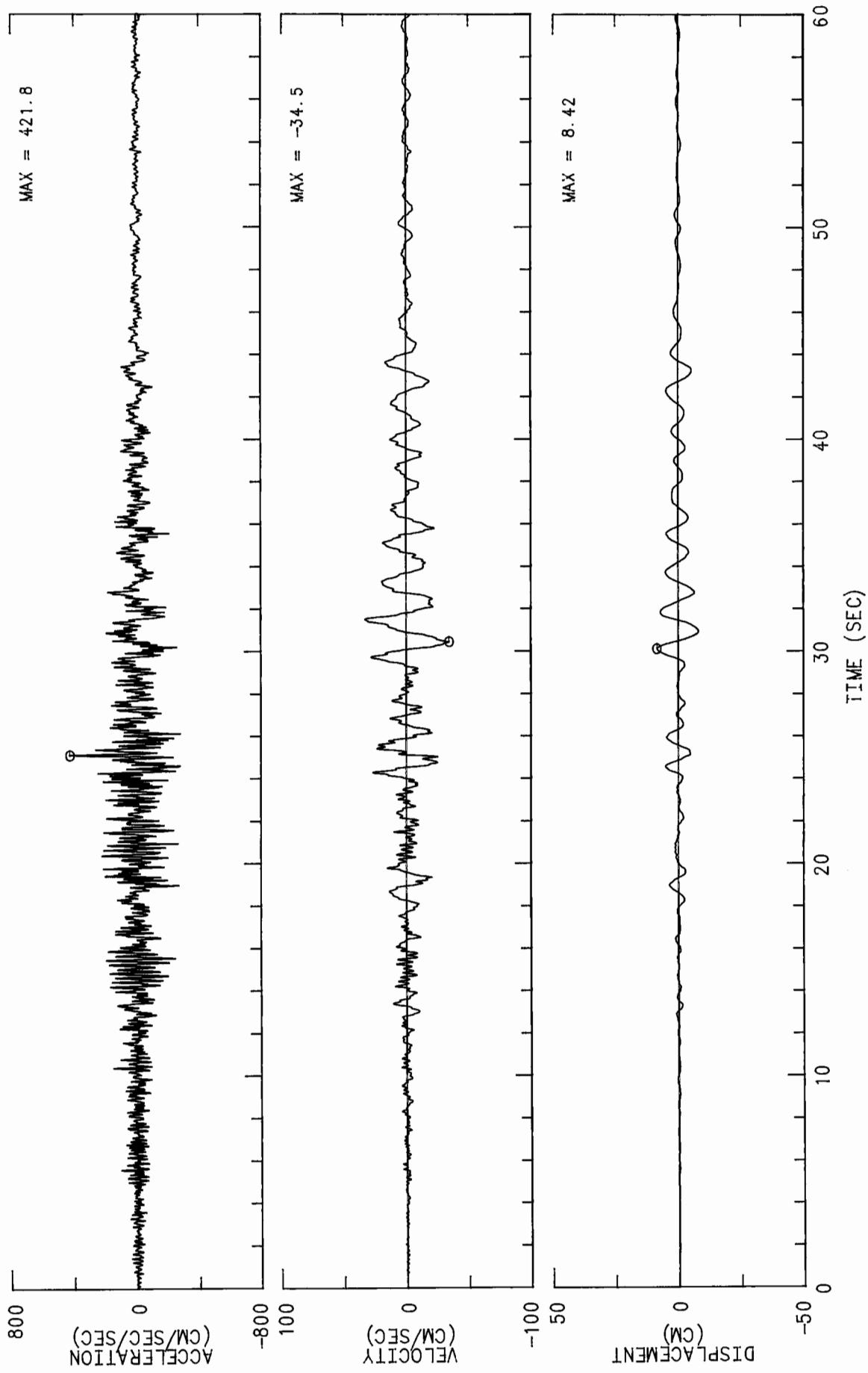
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 14) : UP (DECK BETWEEN BENTS 7 & 8, MID-SPAN)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-778



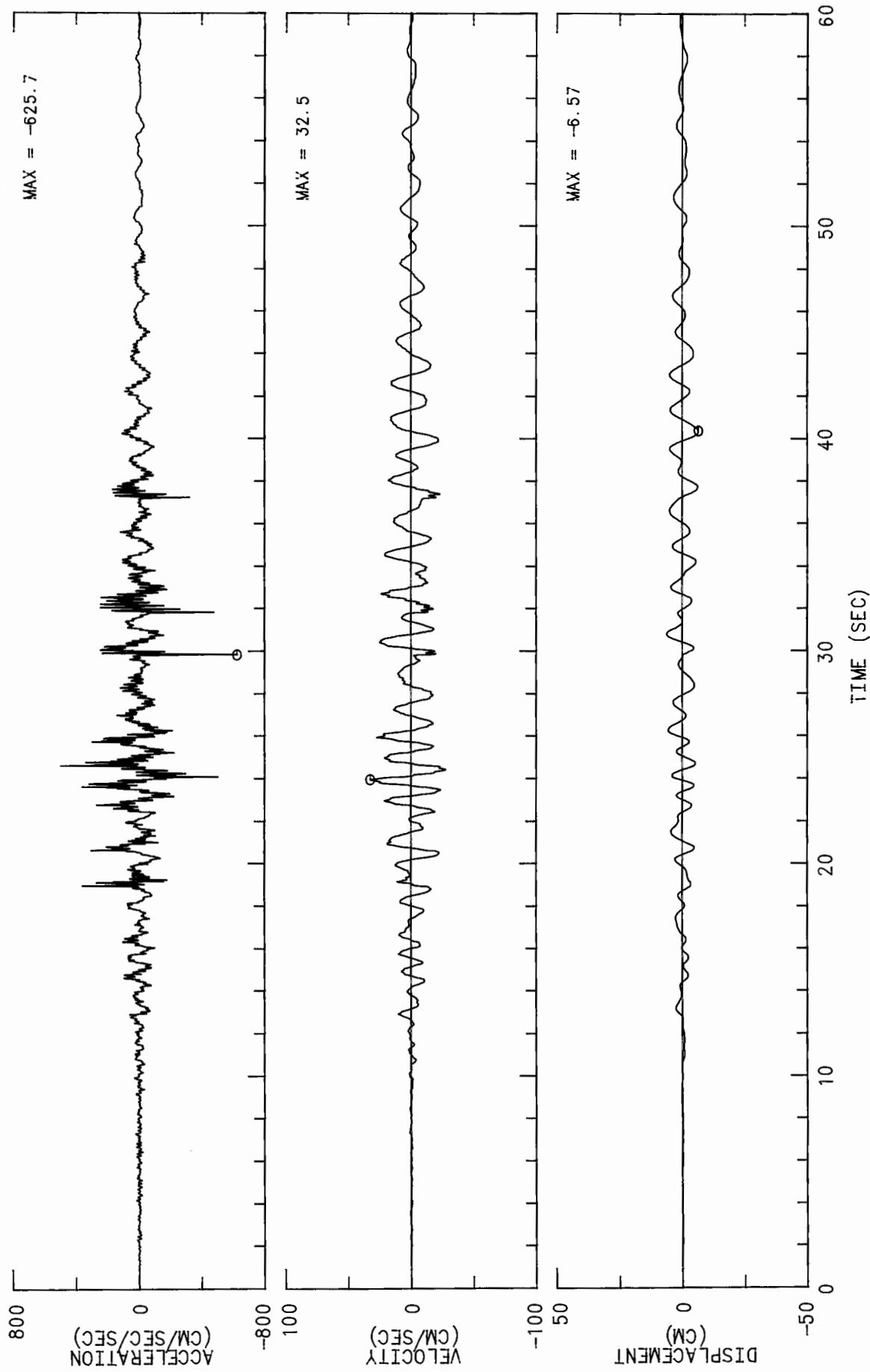
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 15): UP (HINGE NEAR BENT 8, N. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASSED-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-778



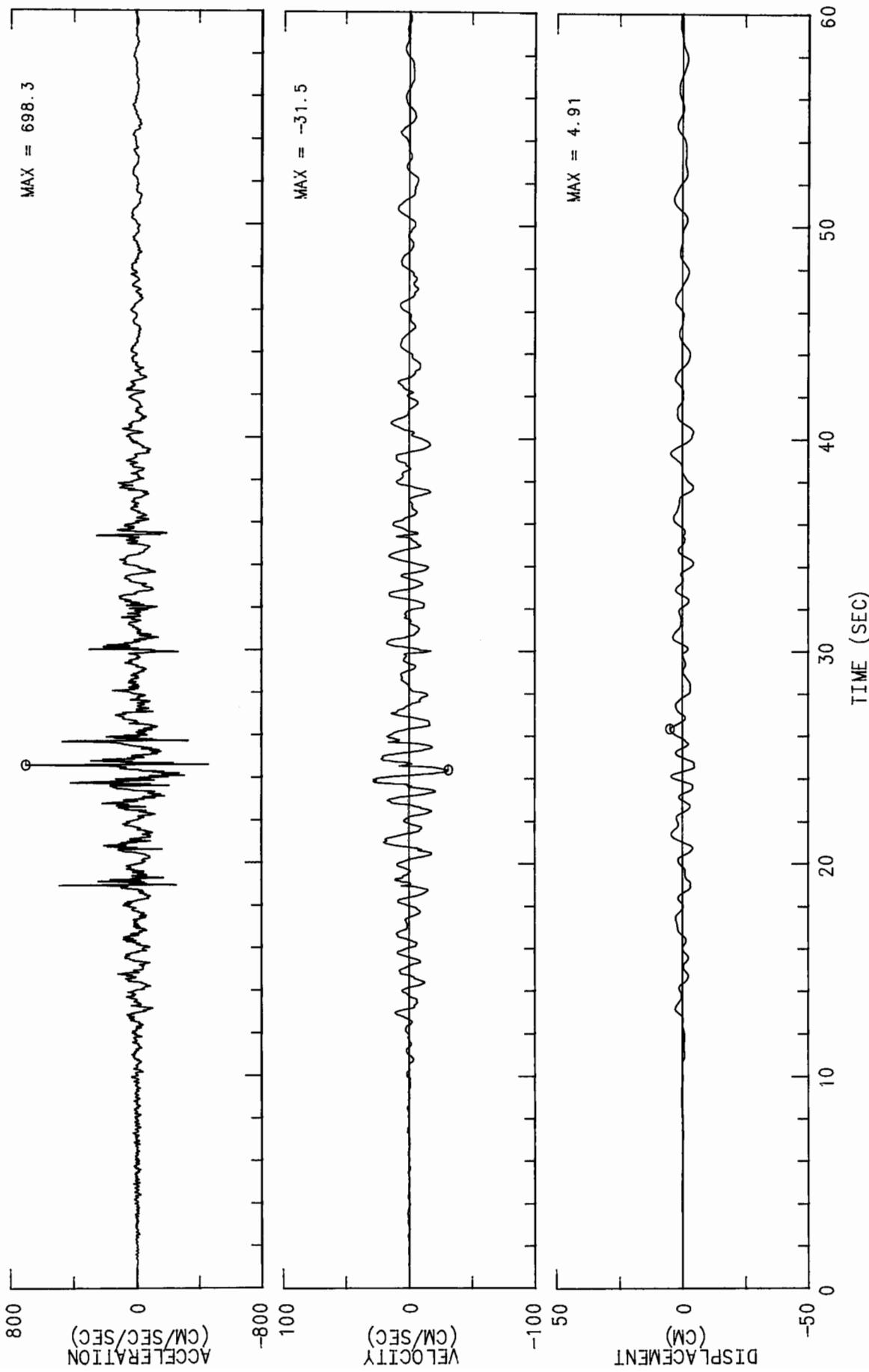
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - 110/215 INTERCHANGE CHN 4 (STA CHN 16): UP (HINGE NEAR BENT 8, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-778



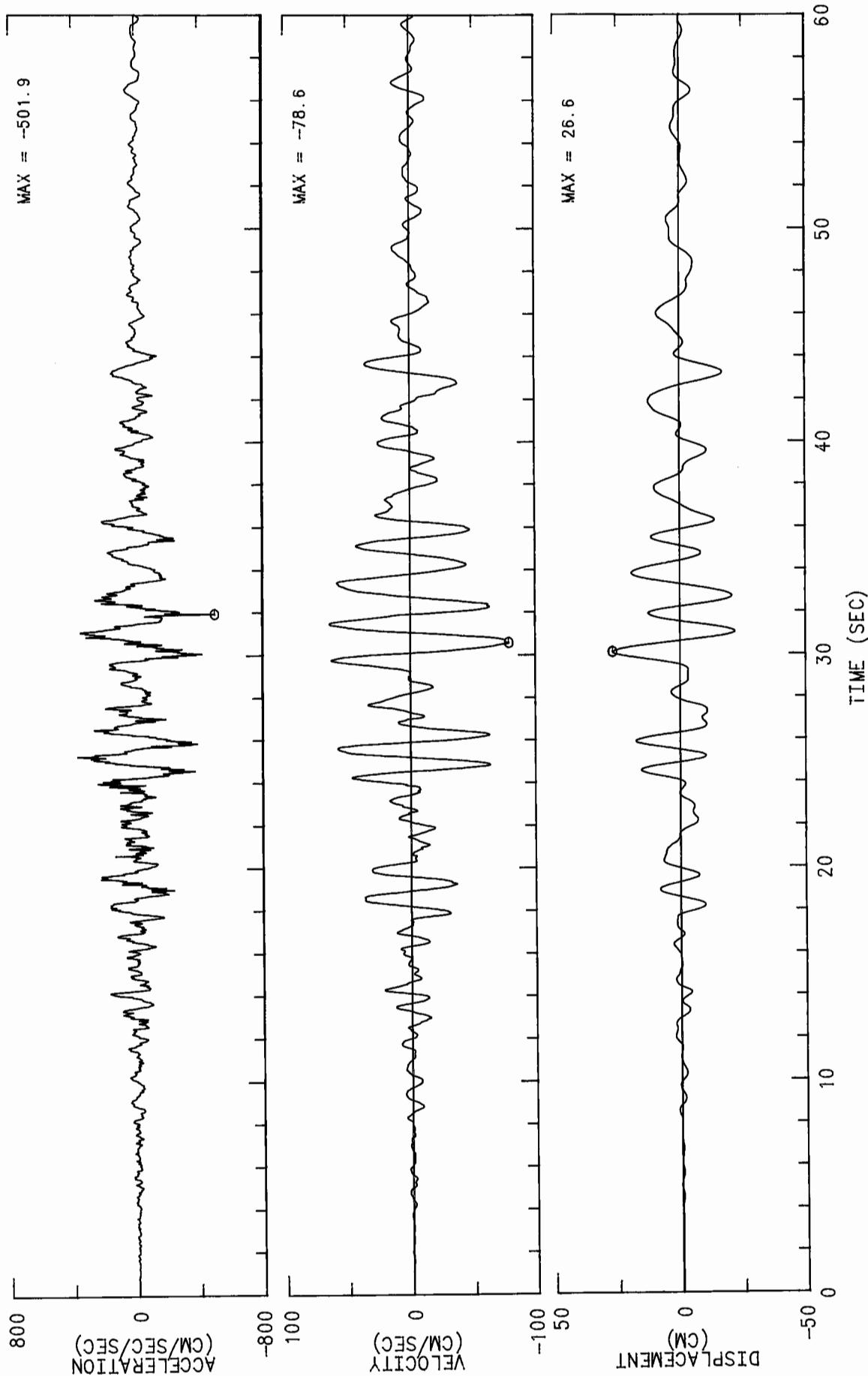
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 17) : LONG (HINGE NEAR BENT 8, W. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-779



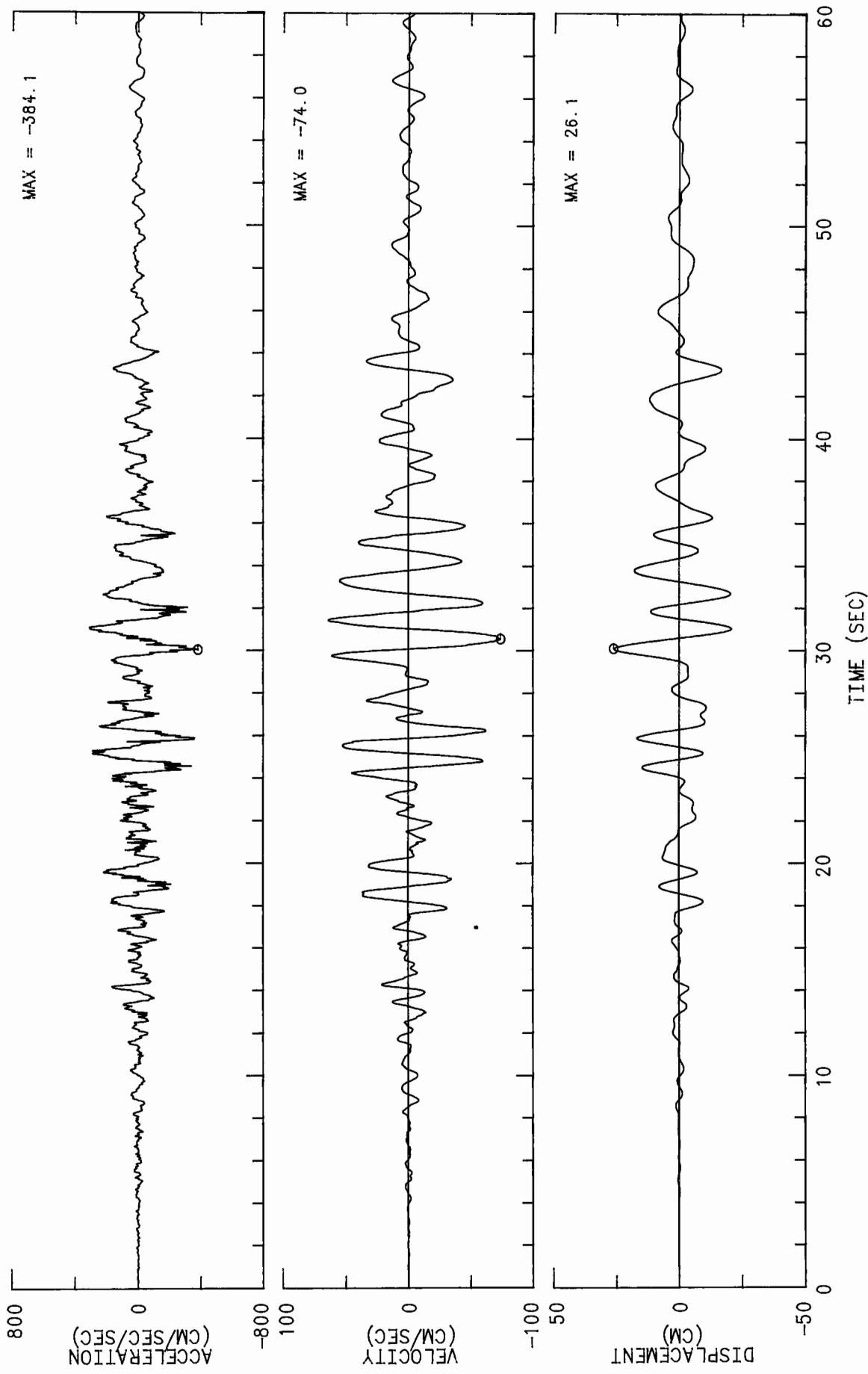
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 18): LONG (HINGE NEAR BENT 8, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-779



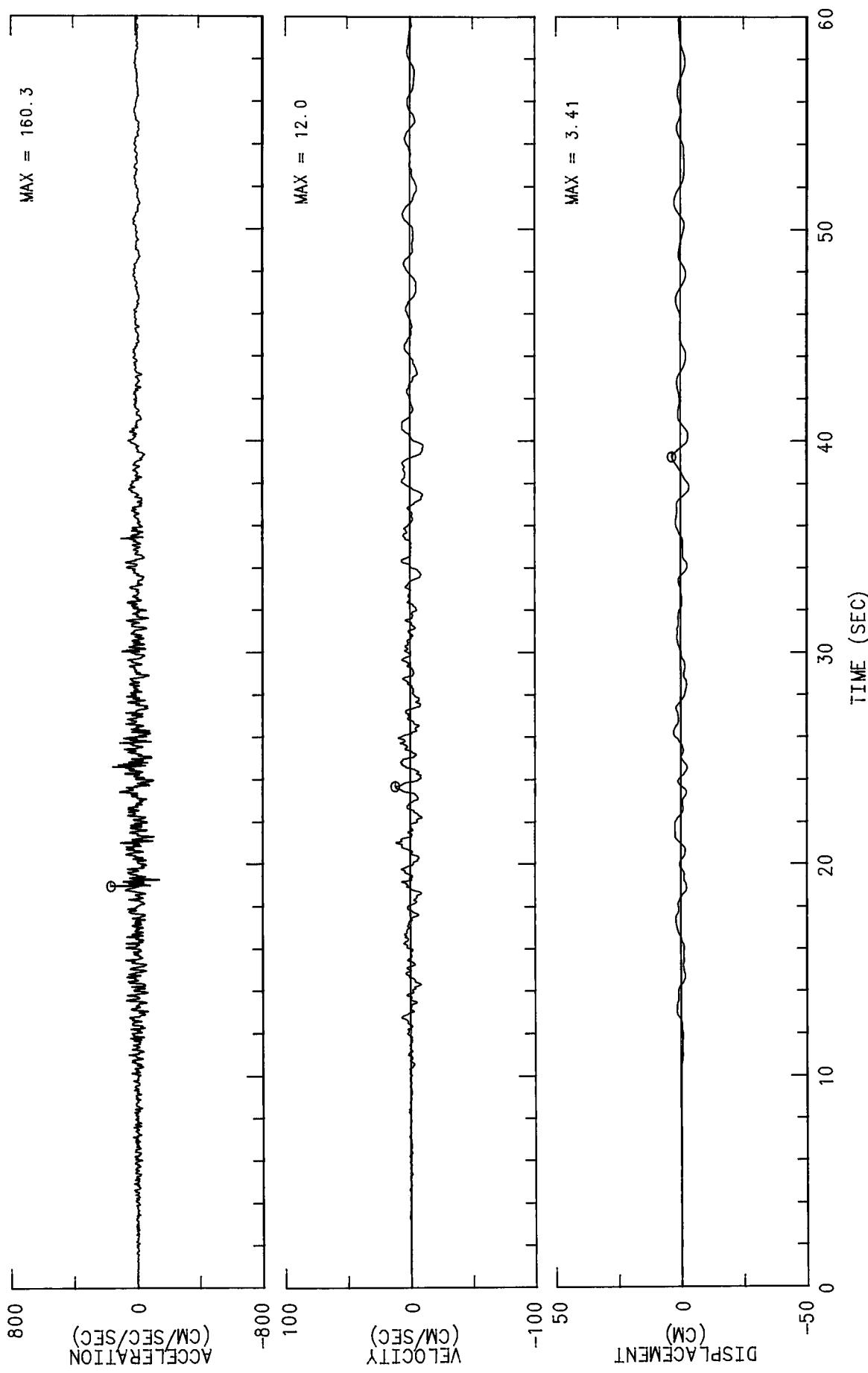
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 19) : TRAN (HINGE NEAR BENT 8, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-779



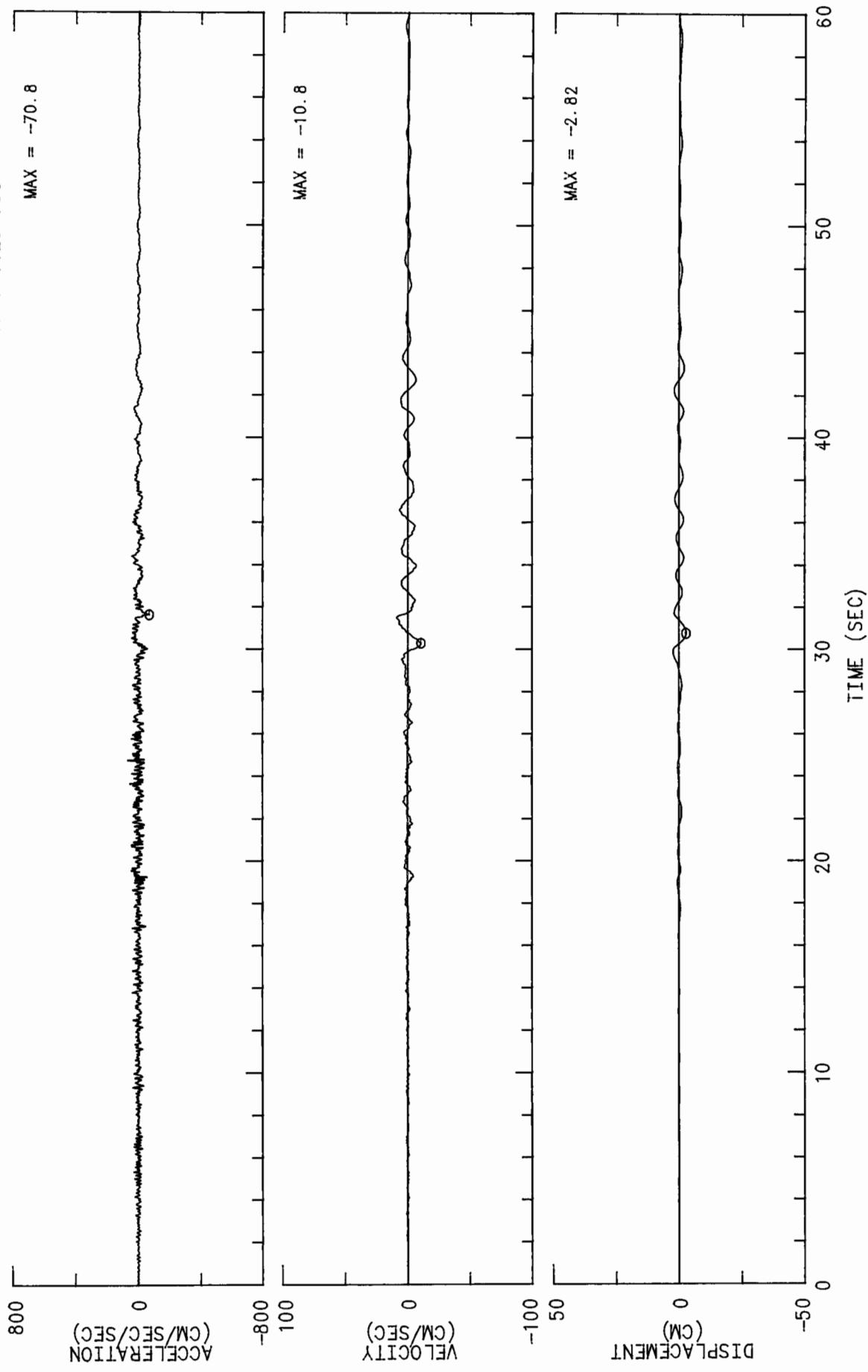
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 20): TRAN (HINGE NEAR BENT 8, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-779



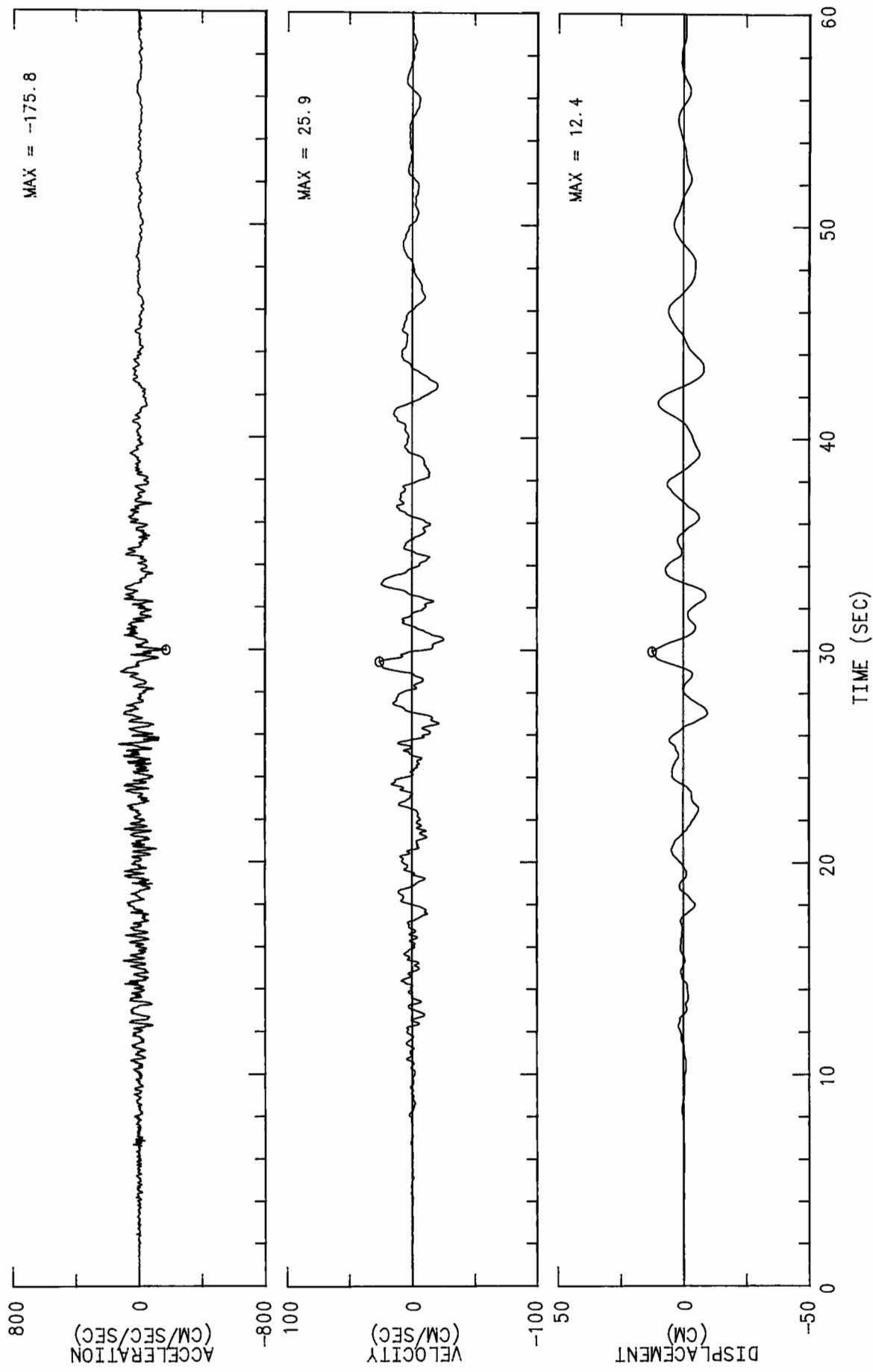
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 22): LONG (BENT 8, FOOTING, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-..20 TO 46.0-50.0 Hz. 23631-CS117-92180.04 091793.1125-780



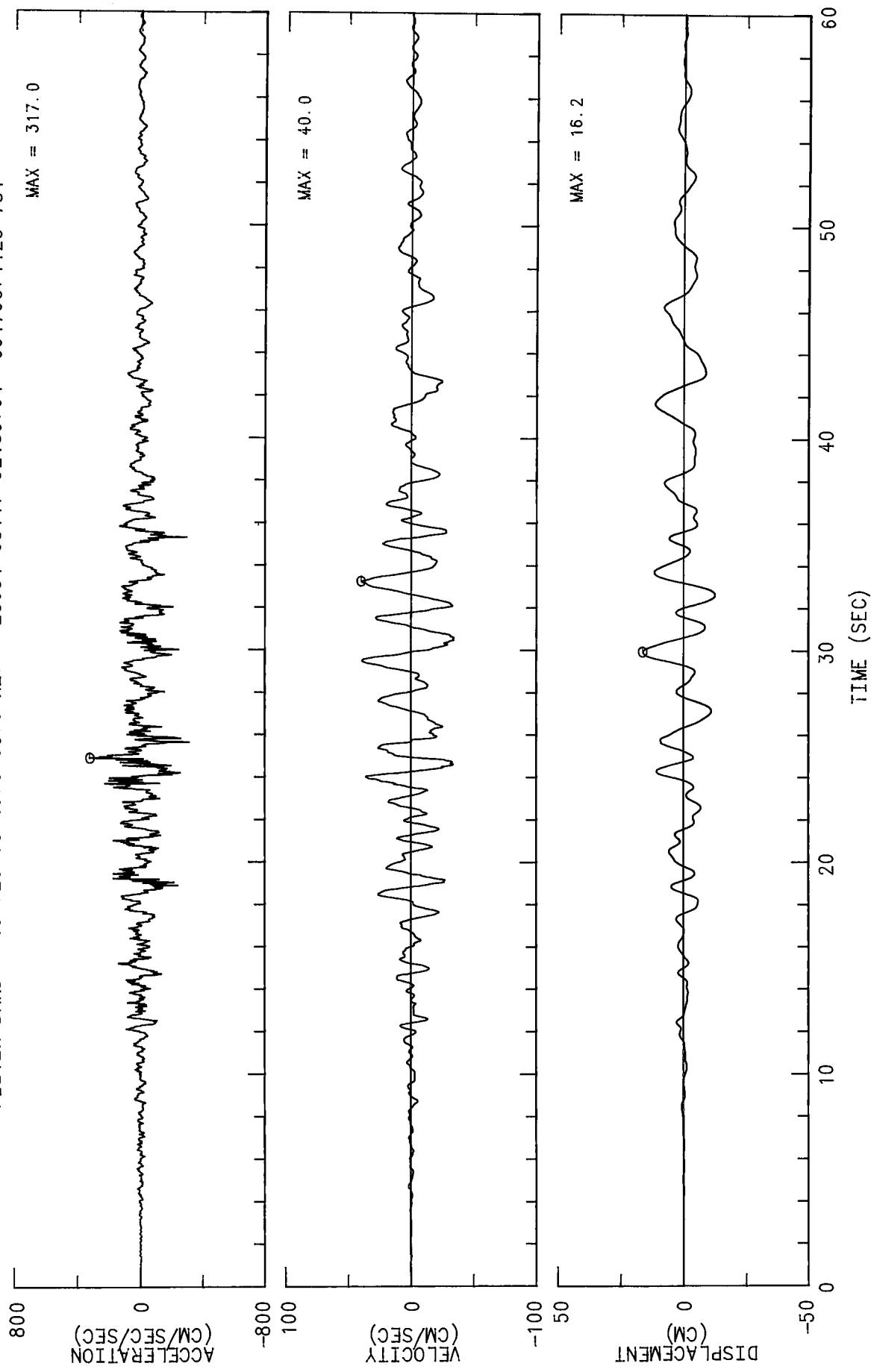
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I 10/215 INTERCHANGE CHN 3 (STA CHN 23) : UP (BENT 8, FOOTING, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-780



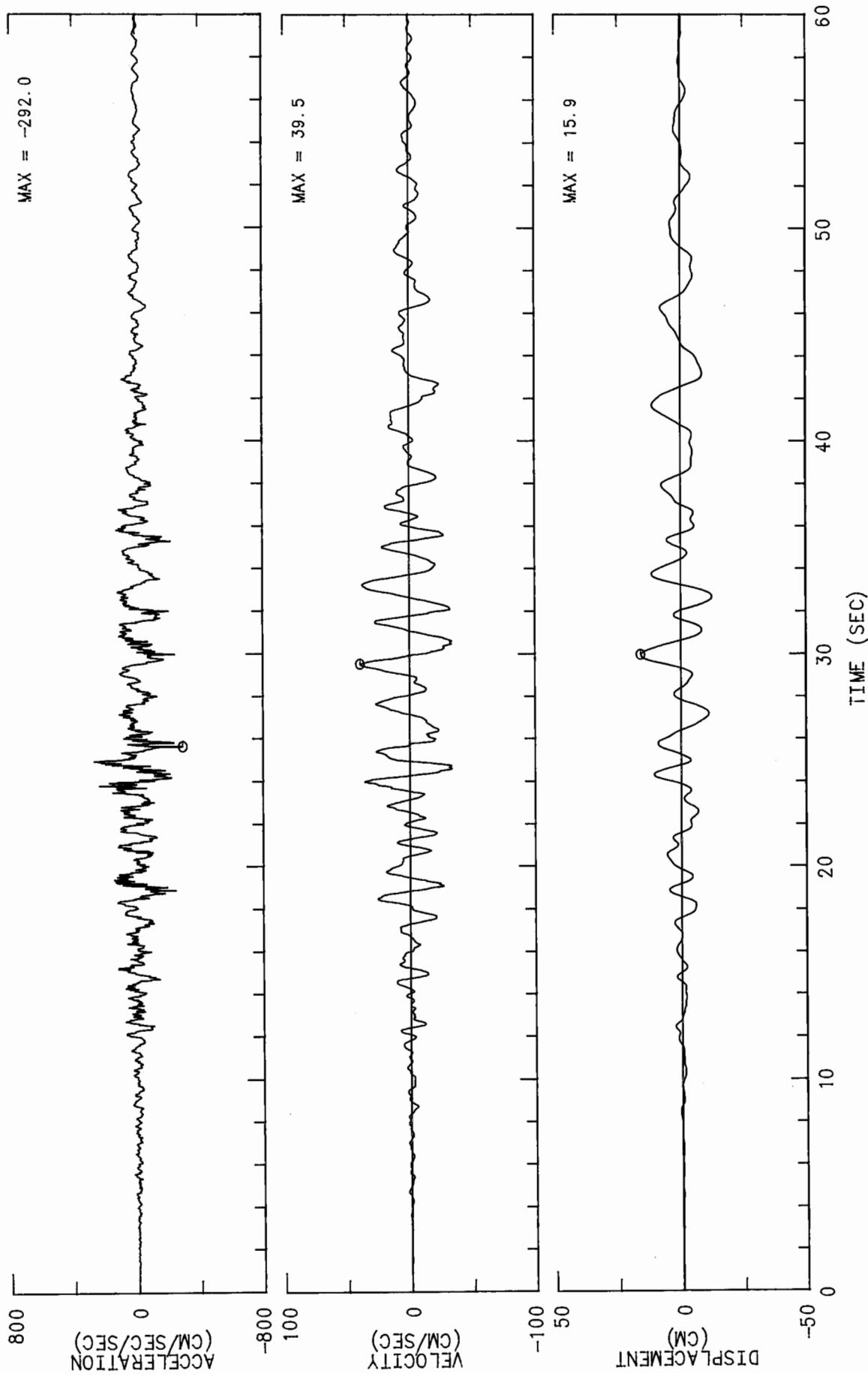
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 24) : TRAN (BENT 8, FOOTING, S. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-..20 TO .46-.50.0 Hz. 23631-CS117-92180.04 091793.1125-780



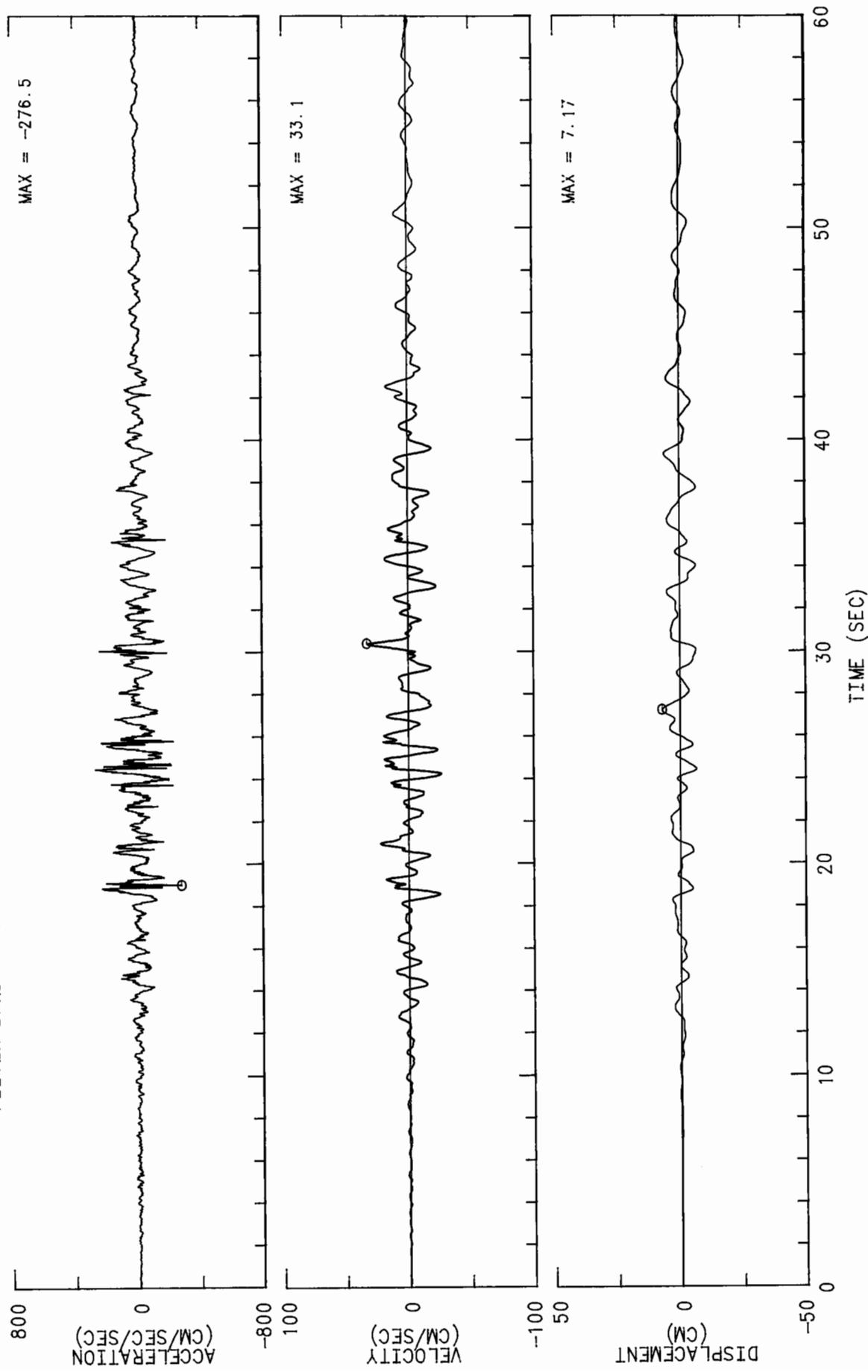
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 25) : TRAN (HINGE NEAR BENT 10, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-781



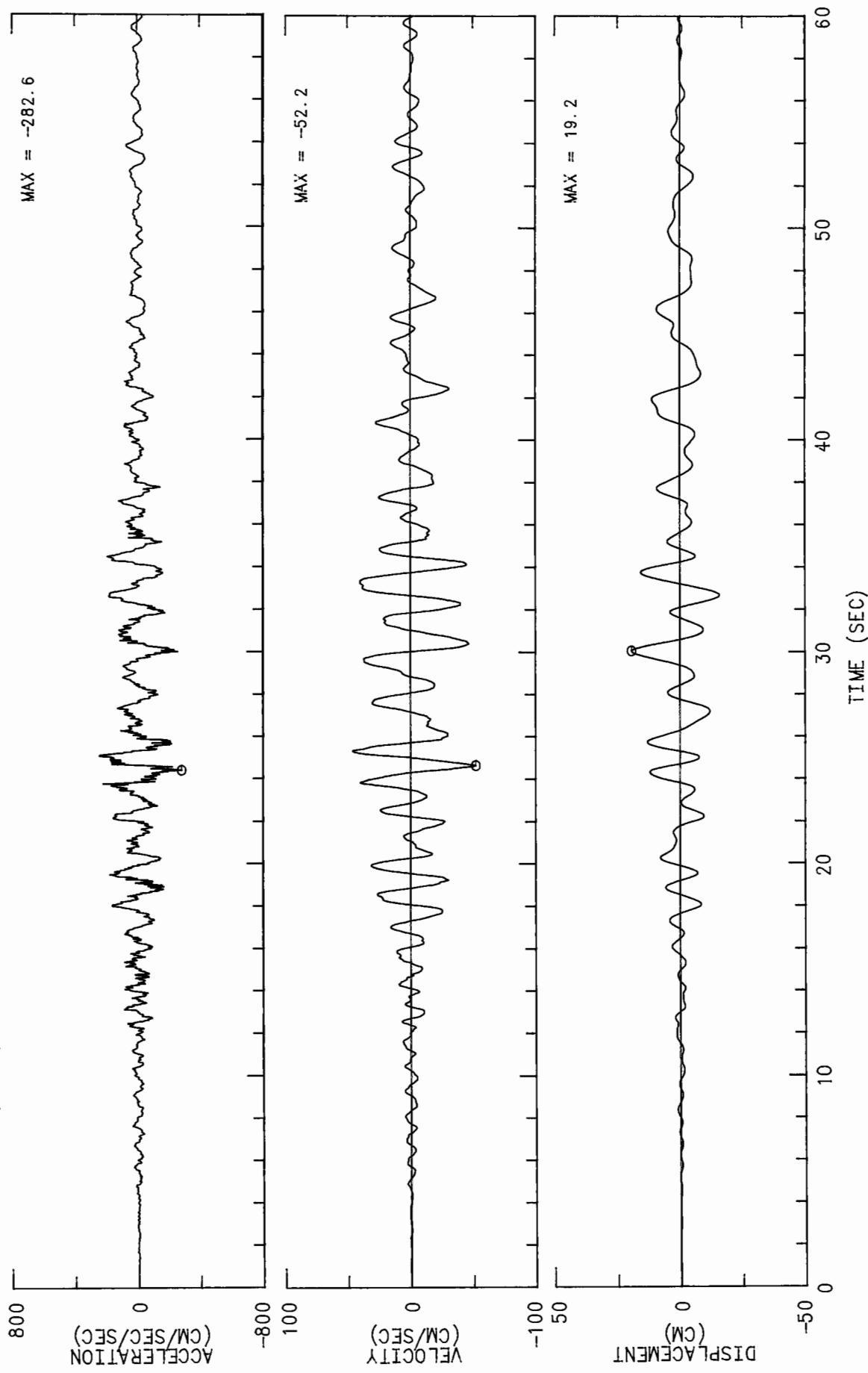
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - 110/215 INTERCHANGE CHN 2 (STA CHN 26): TRAN (HINGE NEAR BENT 10, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-781



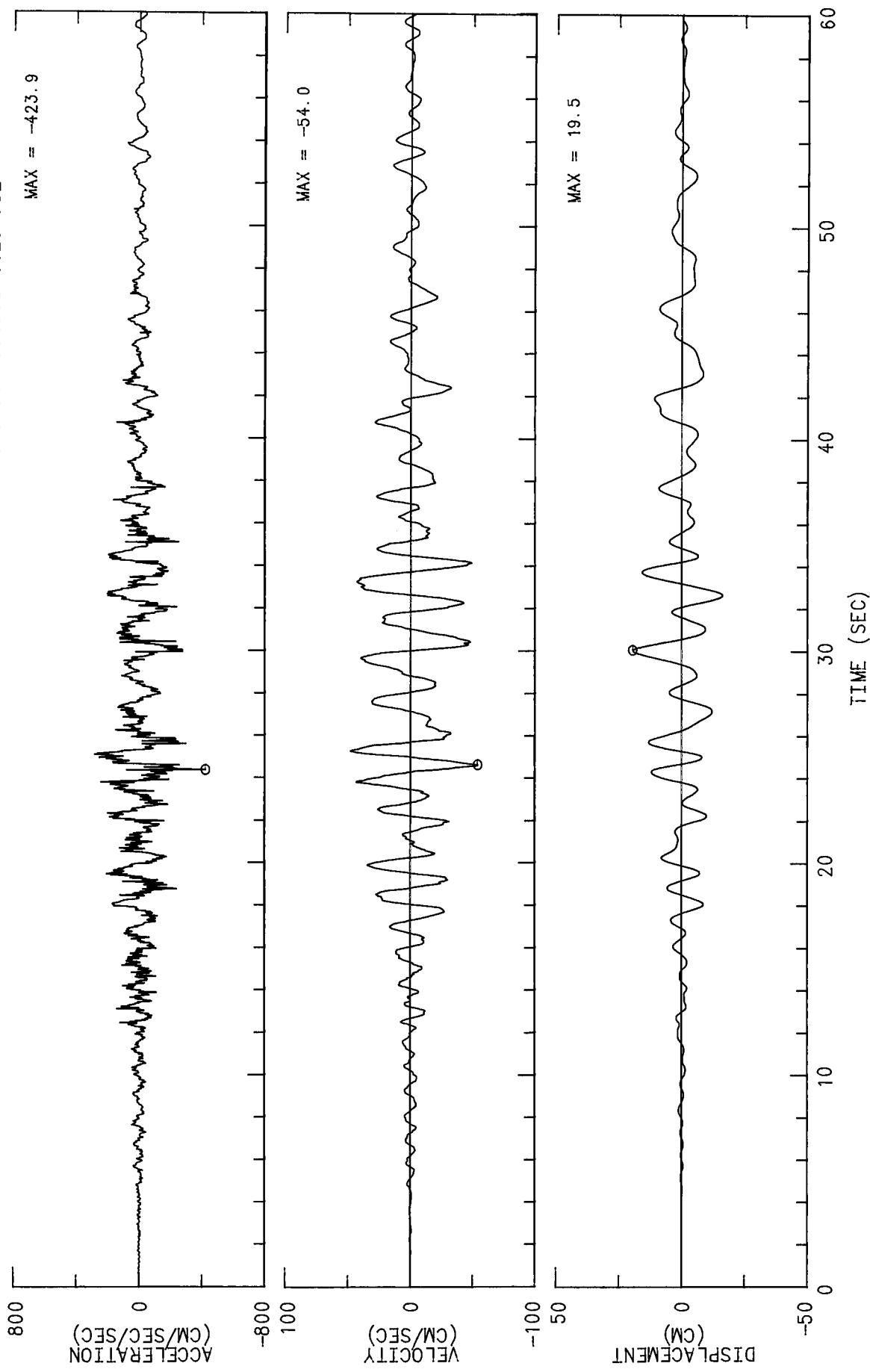
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 28): LONG (HINGE NEAR BENT 11, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-781



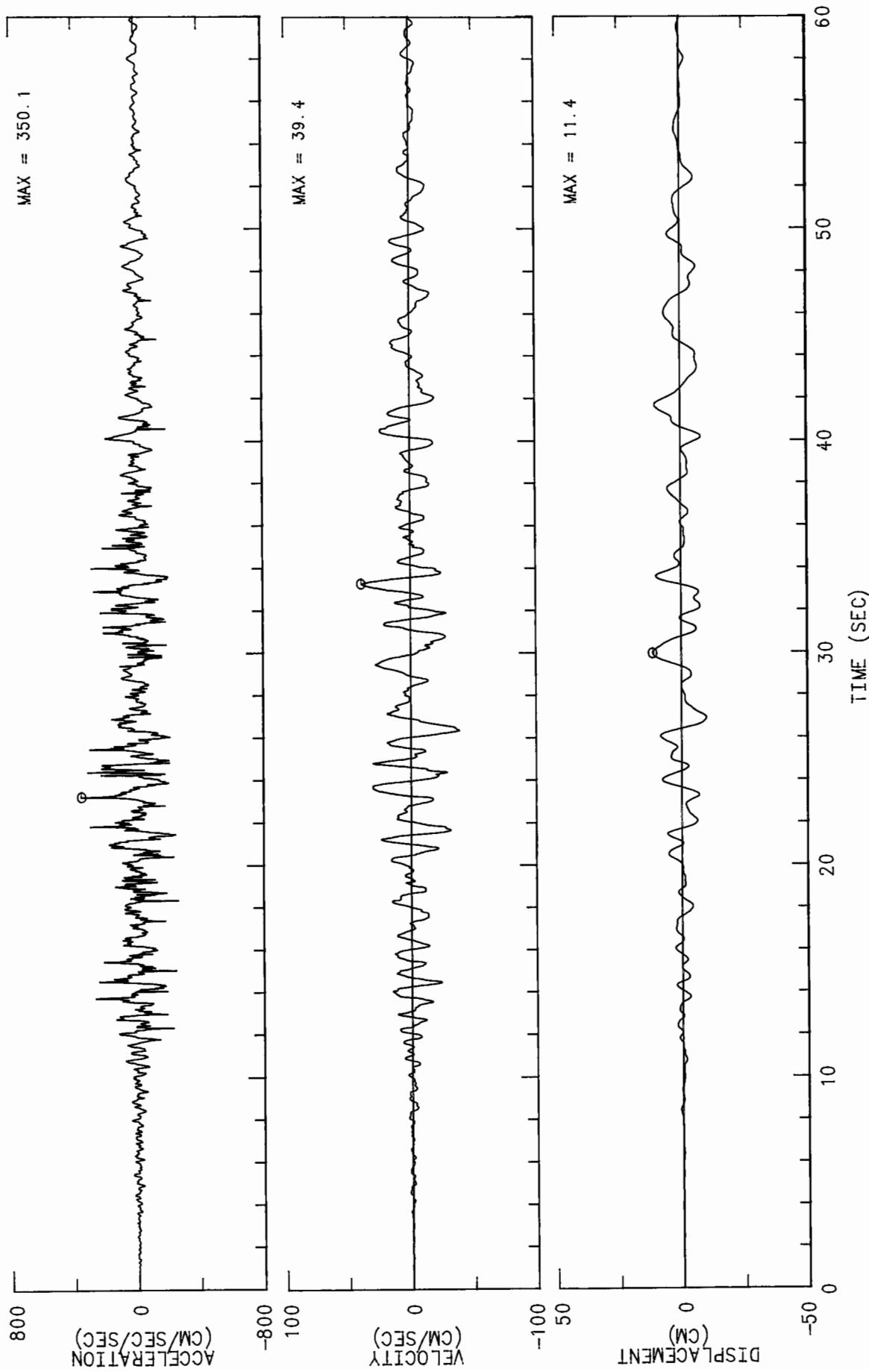
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - T10/215 INTERCHANGE CHN 1 (STA CHN 29): TRAN (HINGE NEAR BENT 11, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-782



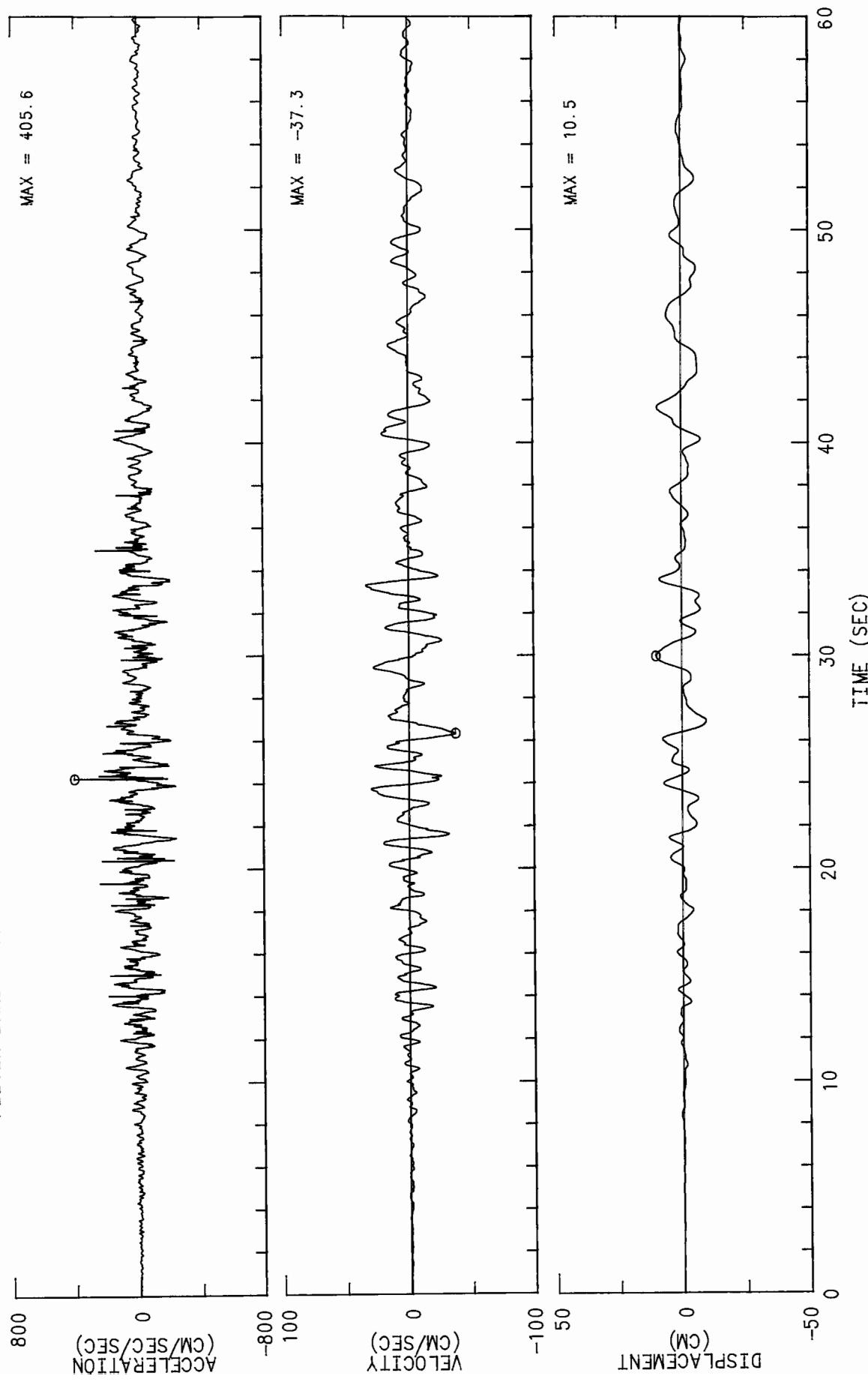
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - T10/215 INTERCHANGE CHN 2 (STA CHN 30): TRAN (HINGE NEAR BENT 11, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-782



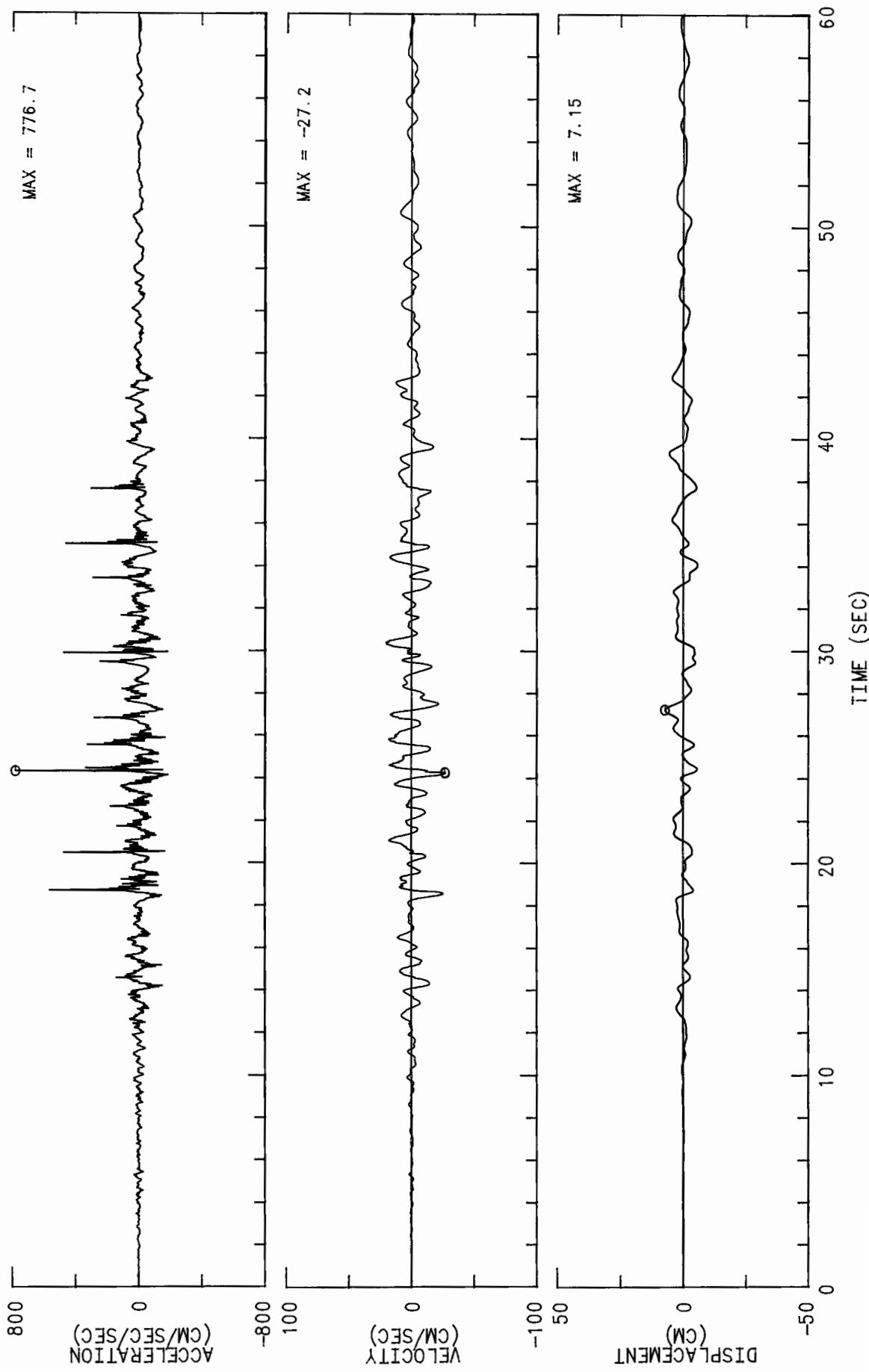
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I 10/215 INTERCHANGE CHN 3 (STA CHN 31): TRAN (HINGE NEAR BENT 14, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-782



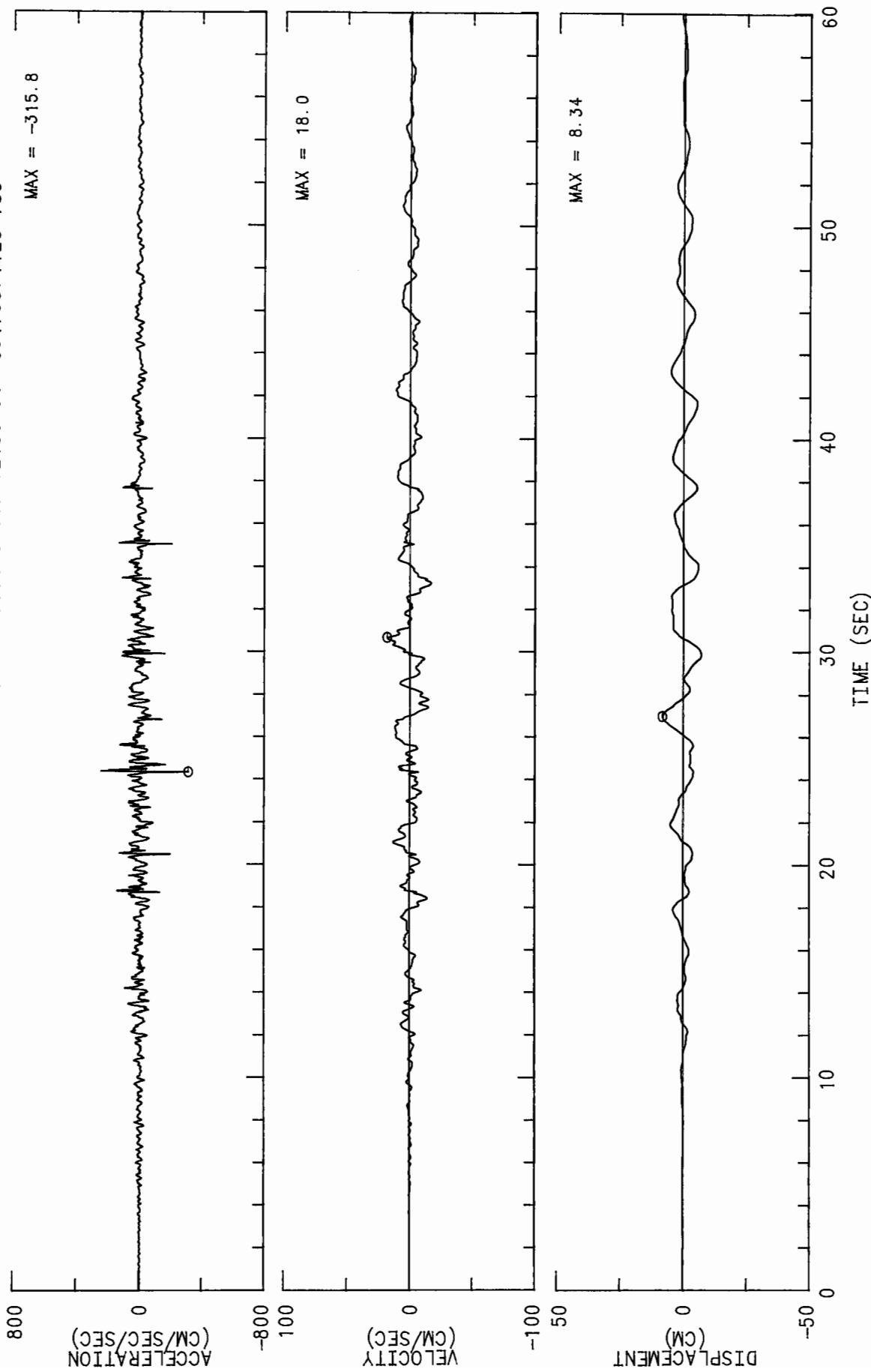
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 32): TRAN (HINGE NEAR BENT 14, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-782



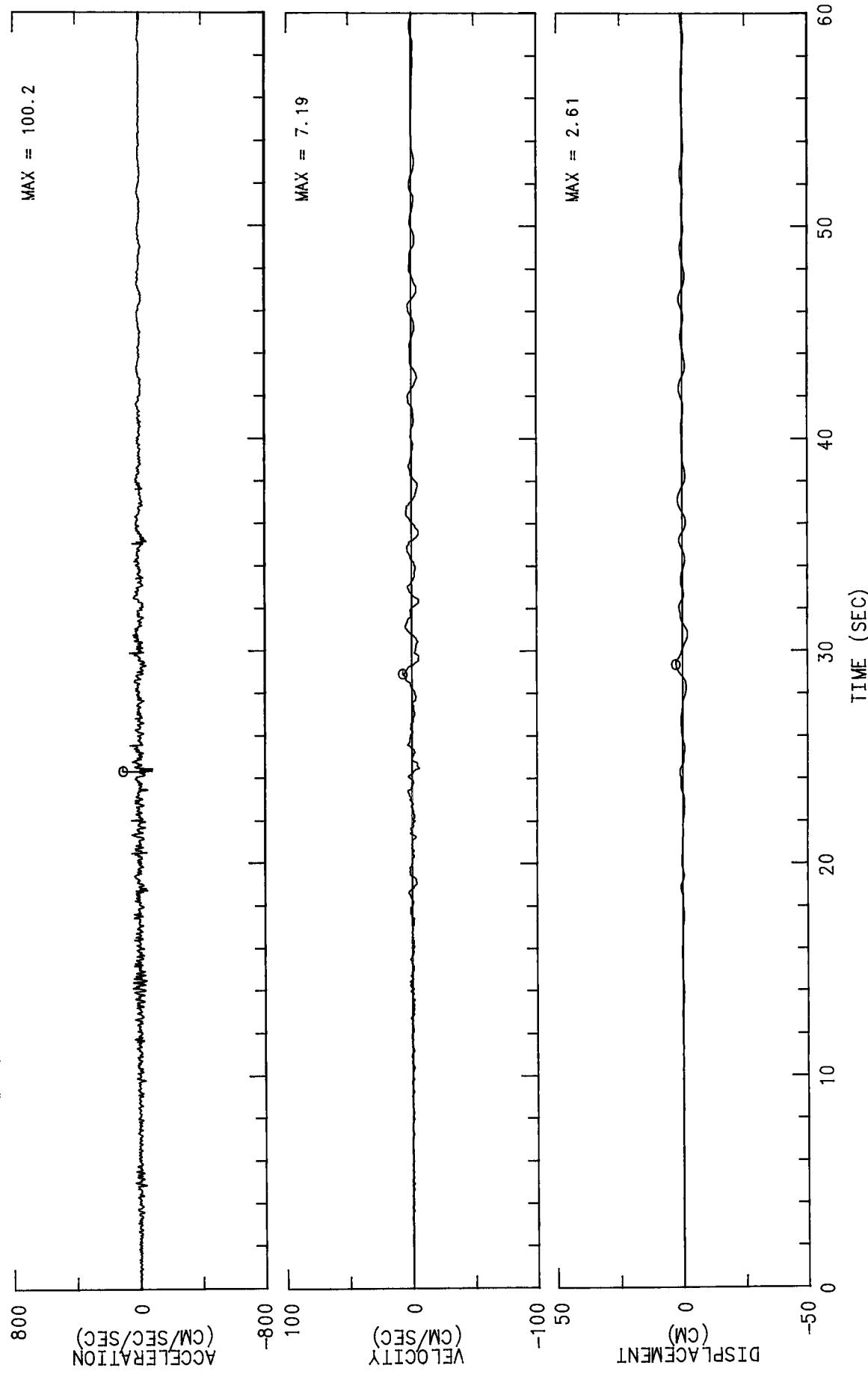
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 33) : LONG (HINGE NEAR BENT 11, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-783



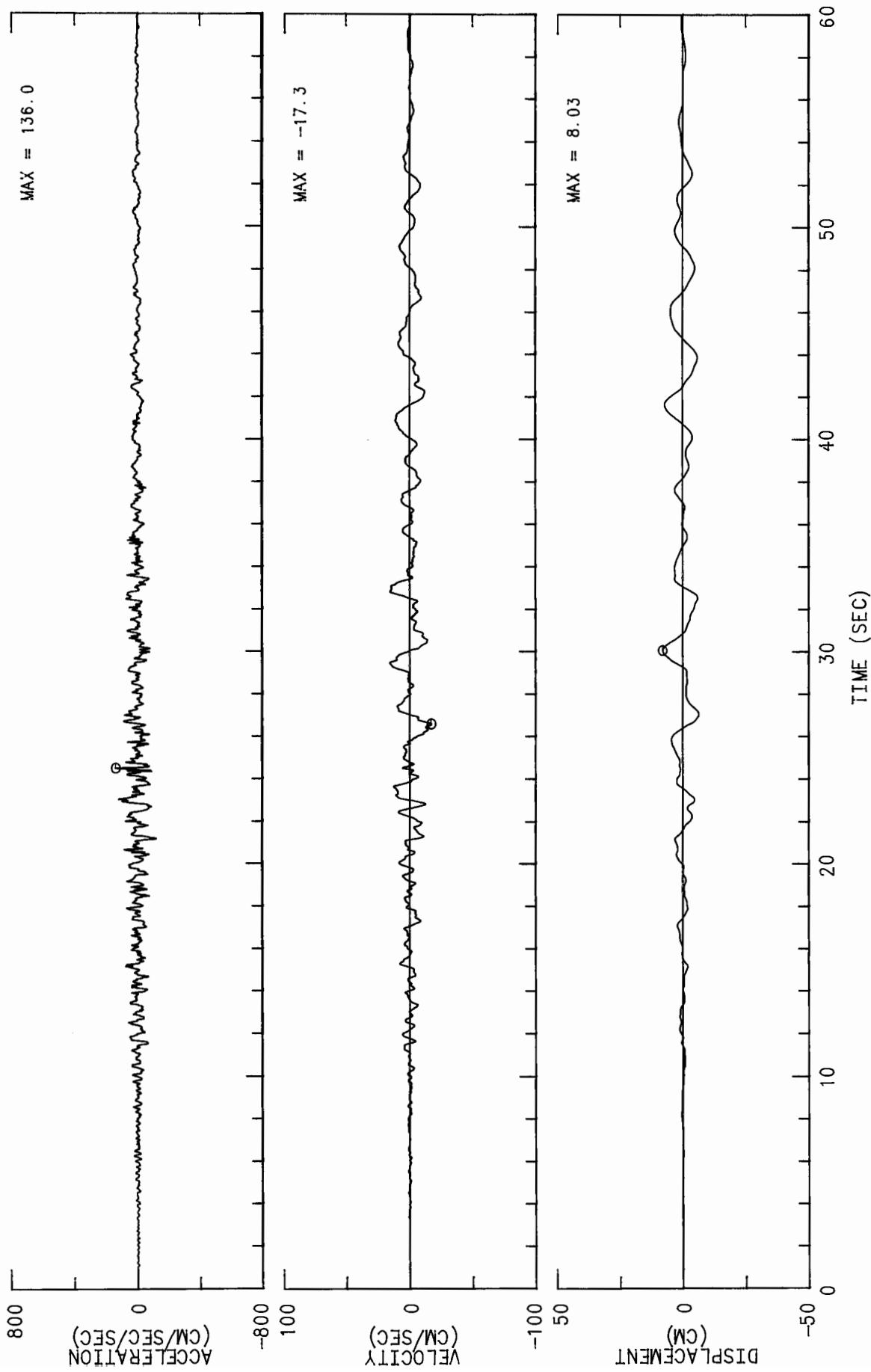
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 34) : LONG (NORTH ABUTMENT)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-783



LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 35) : UP (NORTH ABUTMENT)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-783

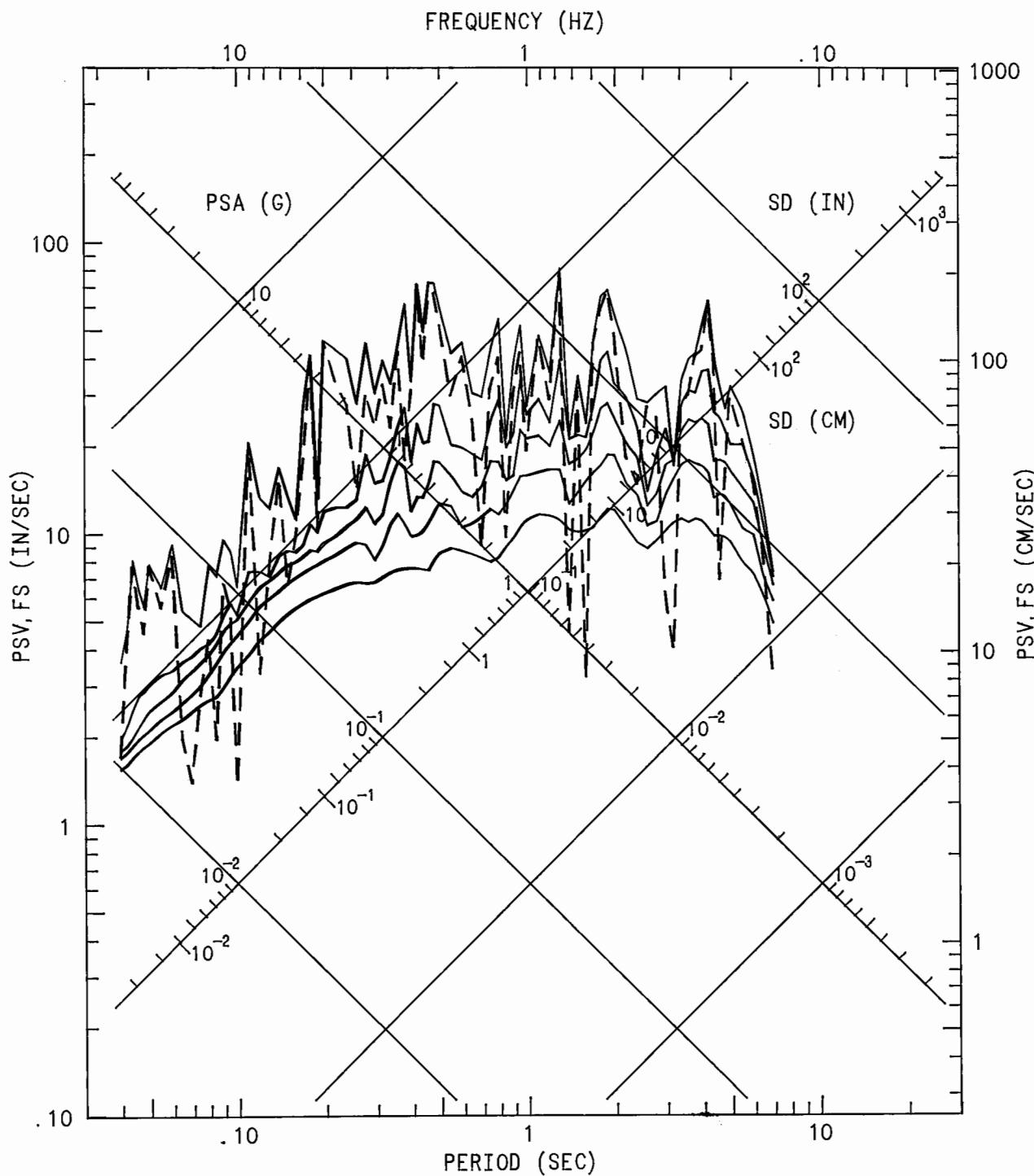


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 36) : TRAN (NORTH ABUTMENT)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-CS117-92180.04 091793.1125-783

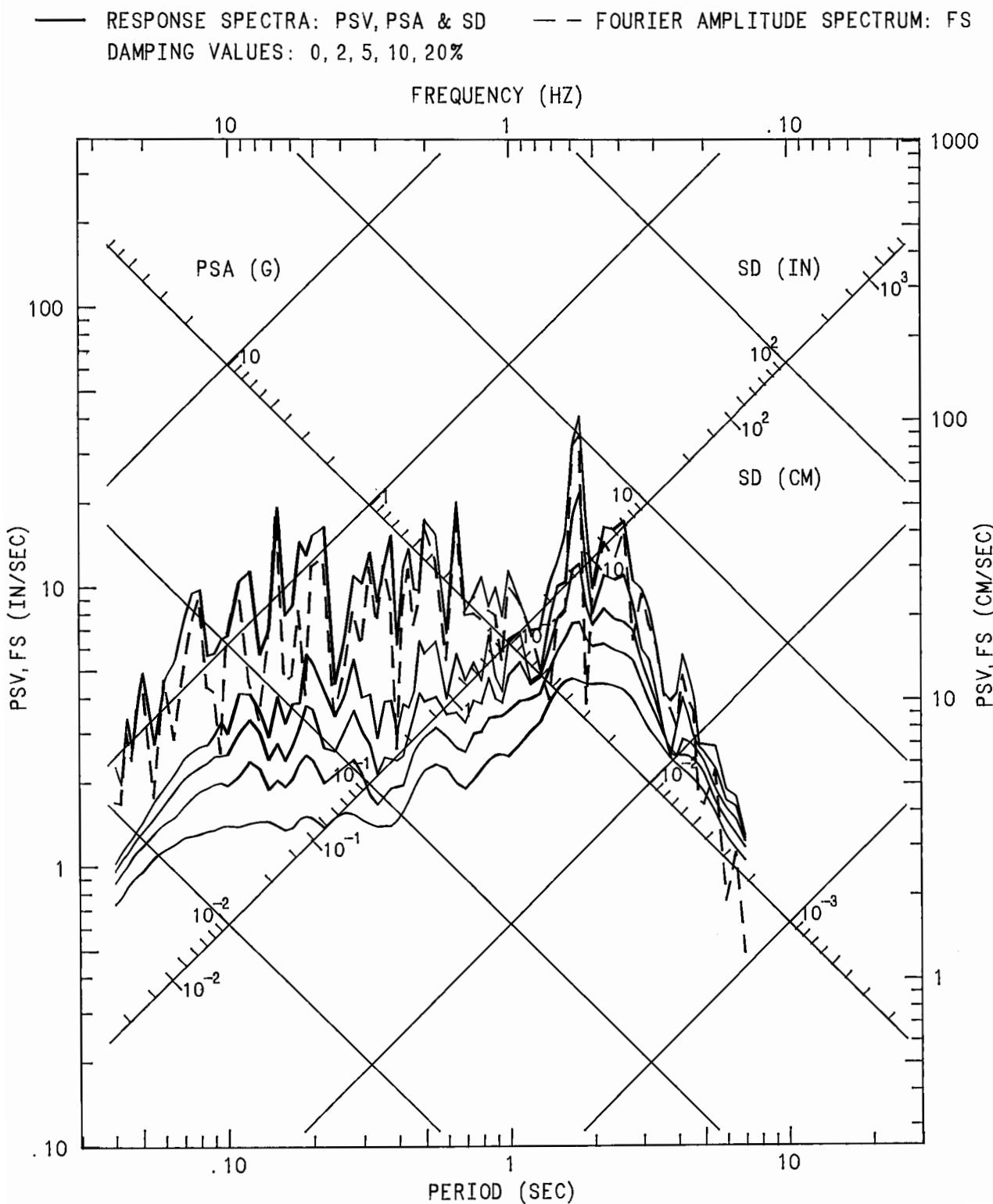


LANDERS EARTHQUAKE      JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1: LONG (WEST ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0775-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

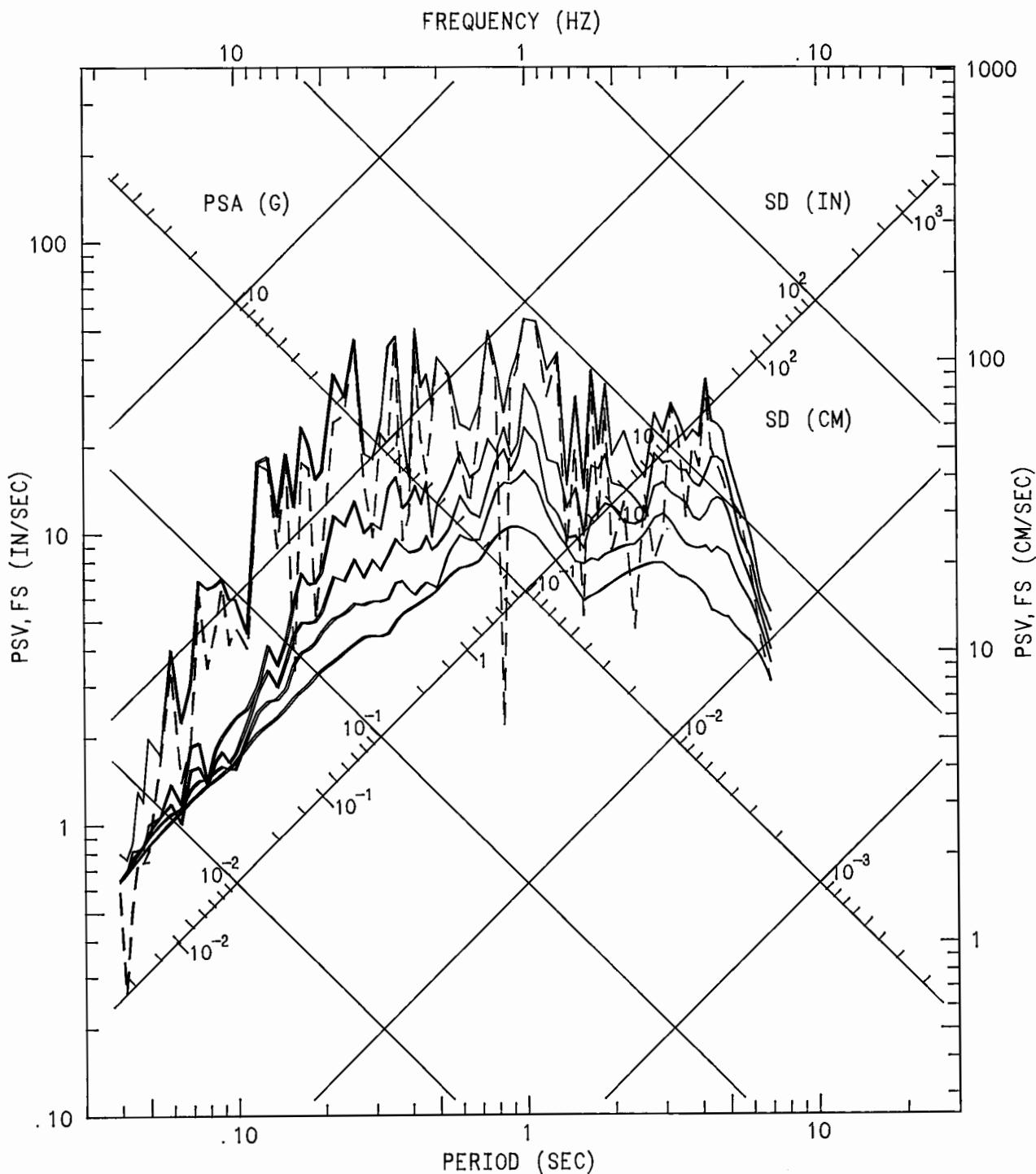


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
CHN 2: UP (WEST ABUTMENT)  
ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23631-E0775-92180.04 100693.1432-COLTON.V3



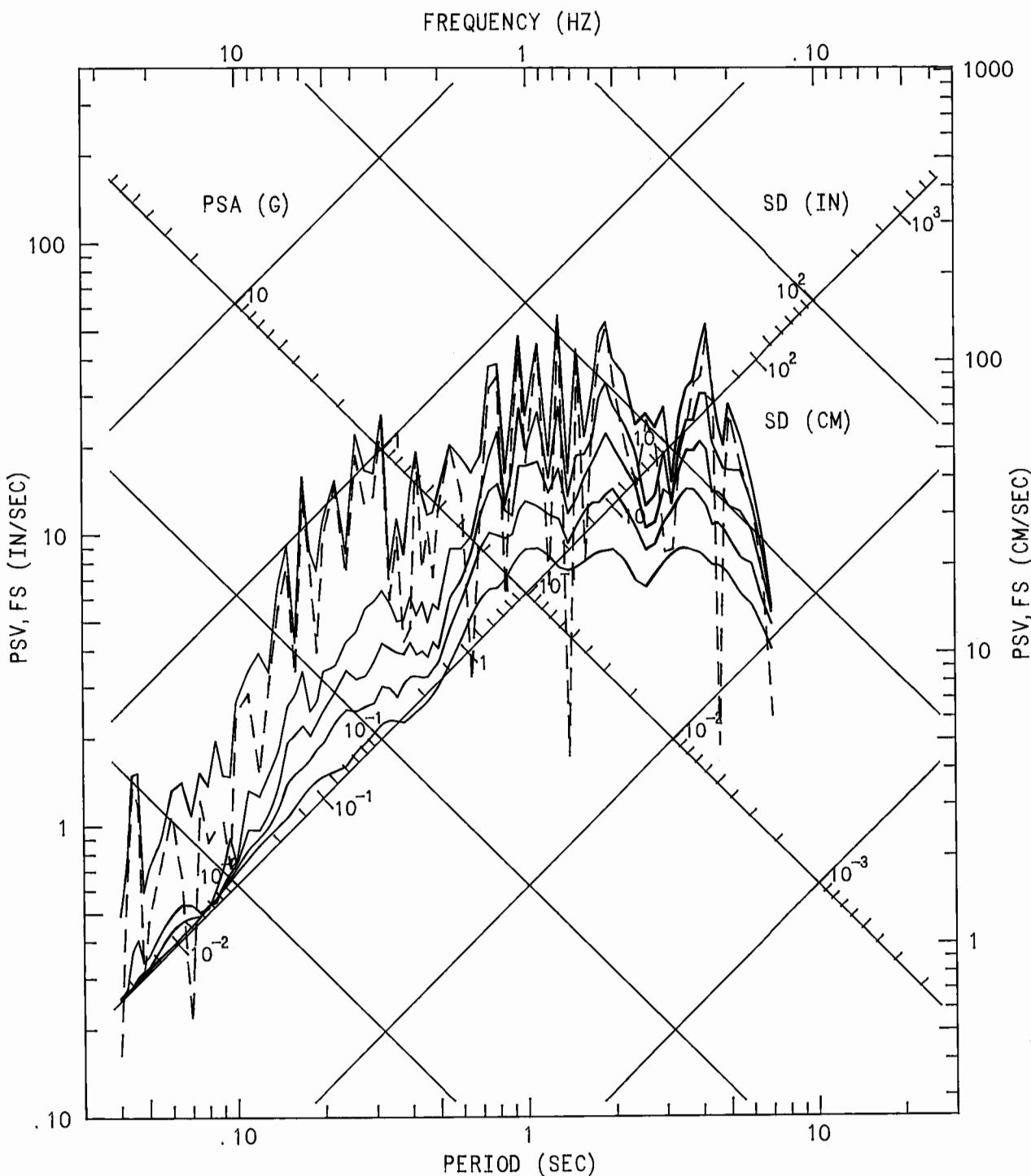
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3: TRAN (WEST ABUTMENT)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-E0775-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

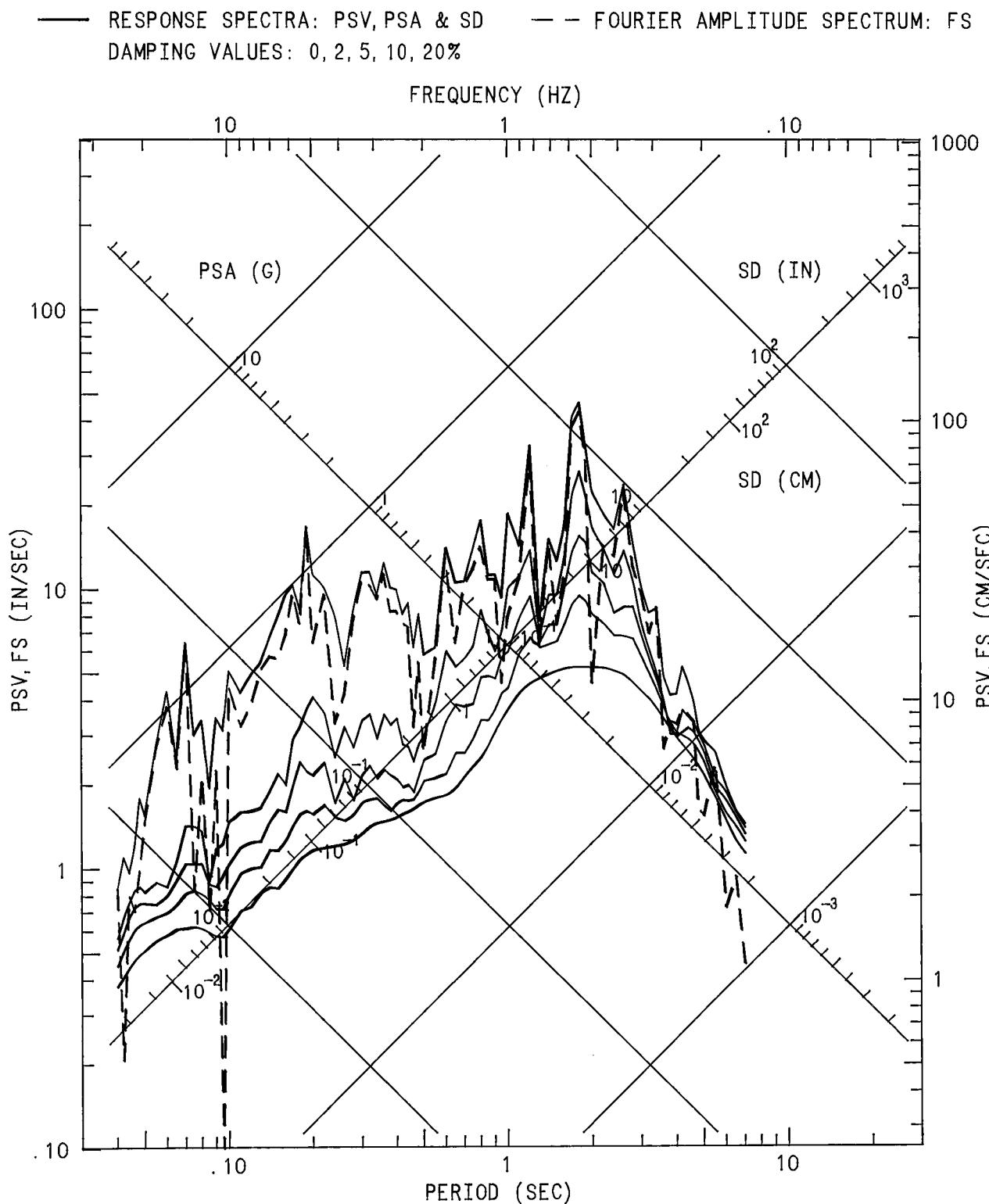


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4: LONG (BENT 3, FOOTING)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-E0775-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

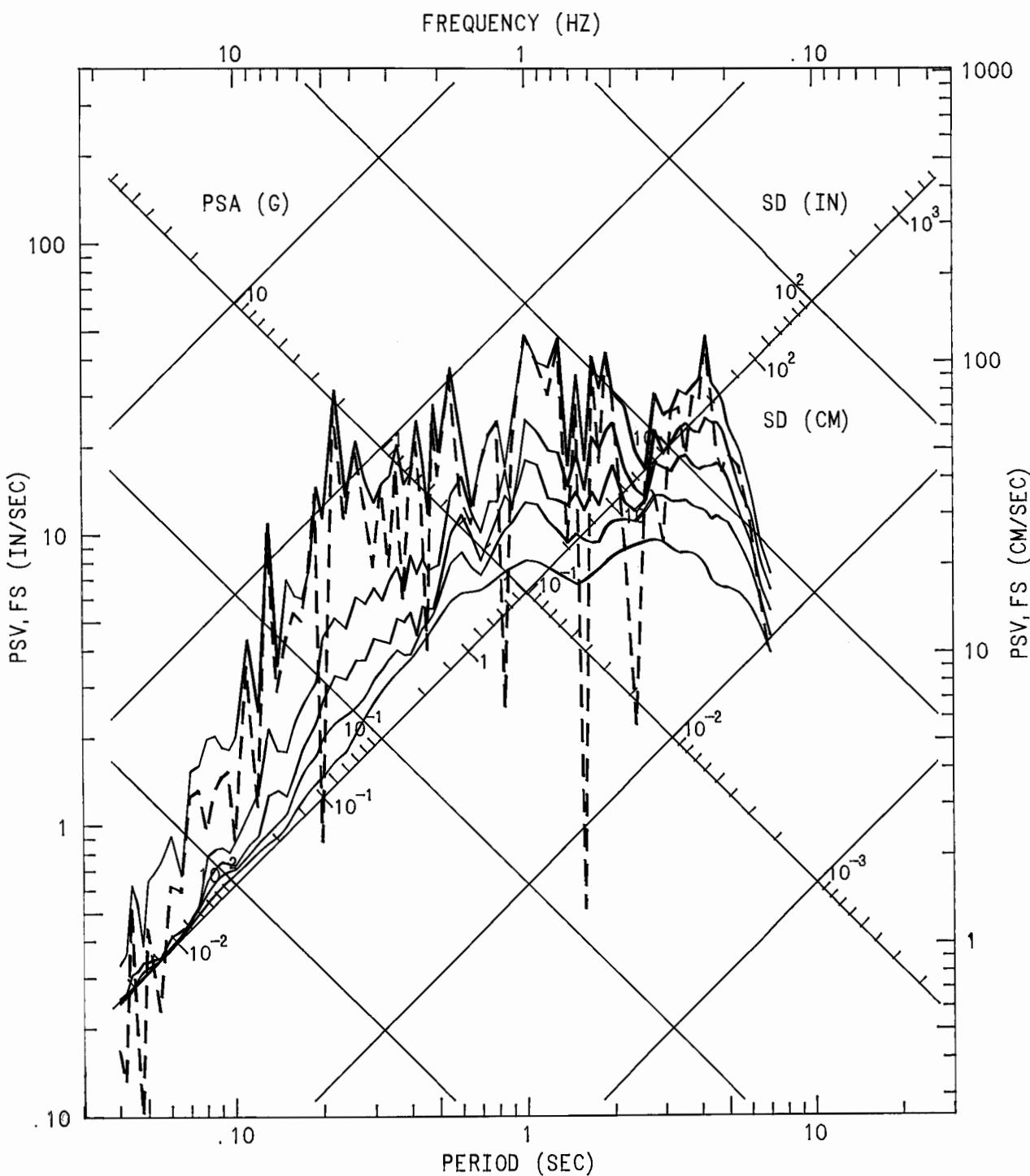


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 5): UP (BENT 8, FOOTING, N. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0776-92180.04 100693.1432-COLTON.V3



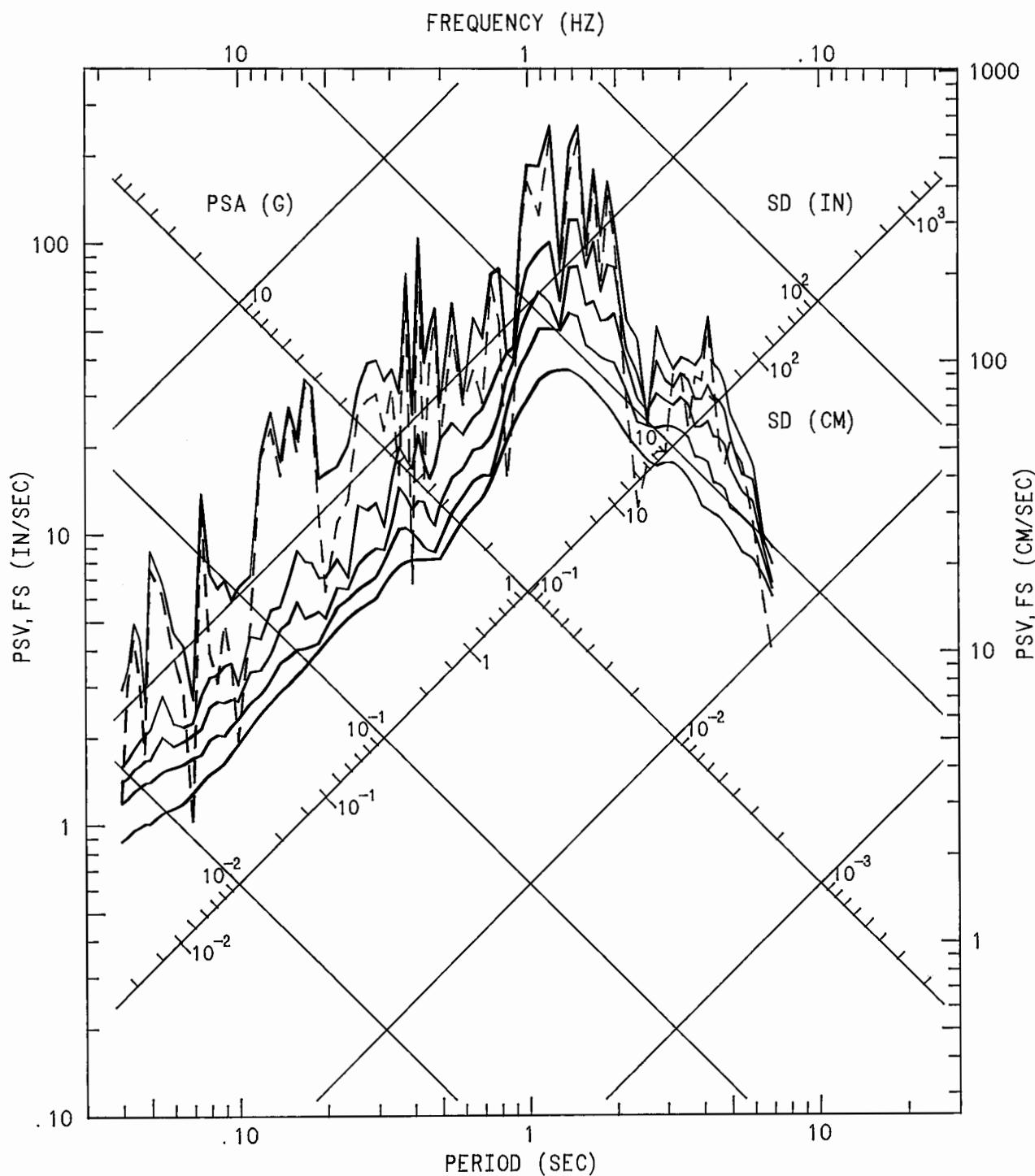
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 6): TRAN (BENT 3, FOOTING)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-E0776-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



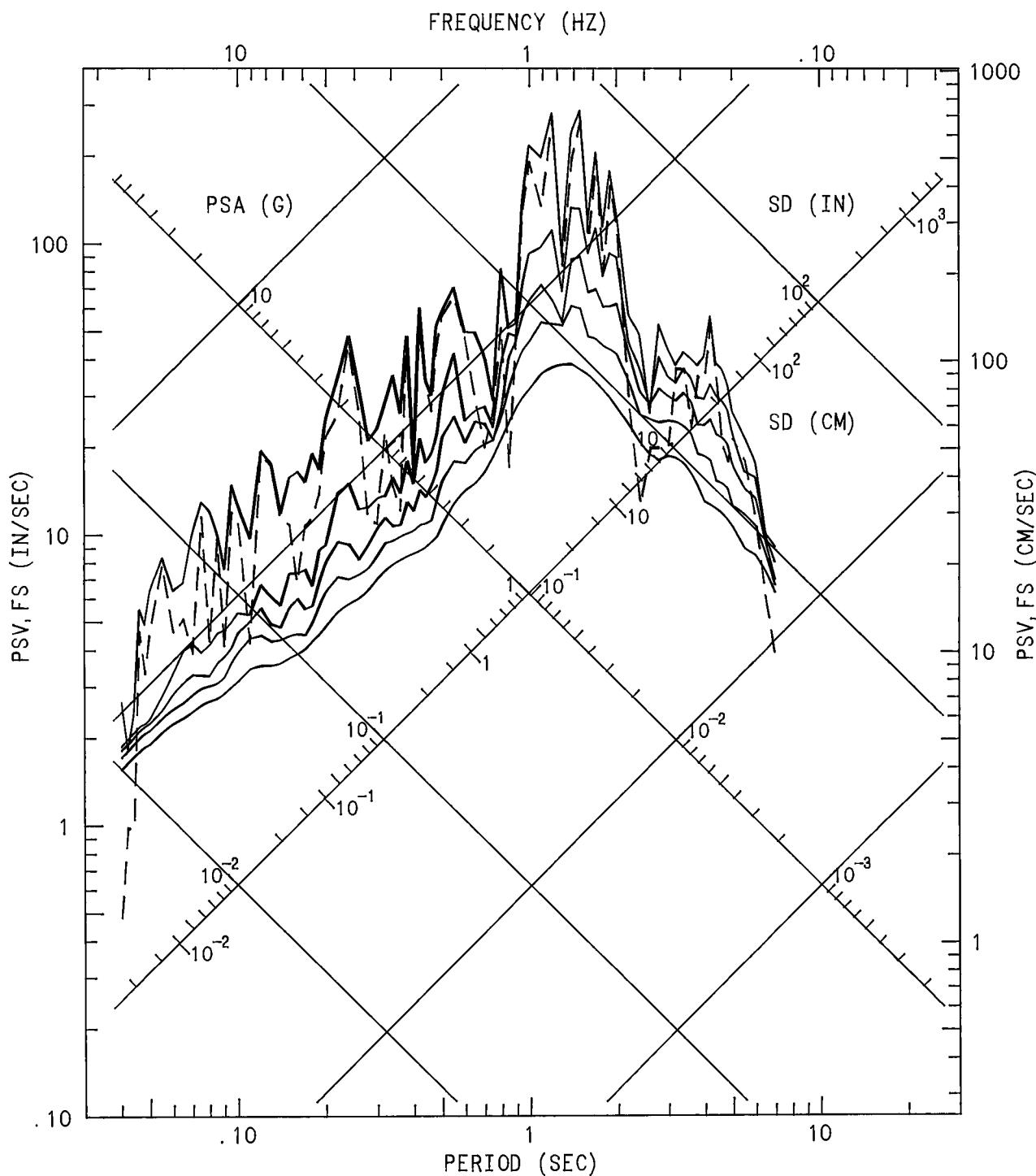
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 7): TRAN (HINGE NEAR BENT 3, W. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0776-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



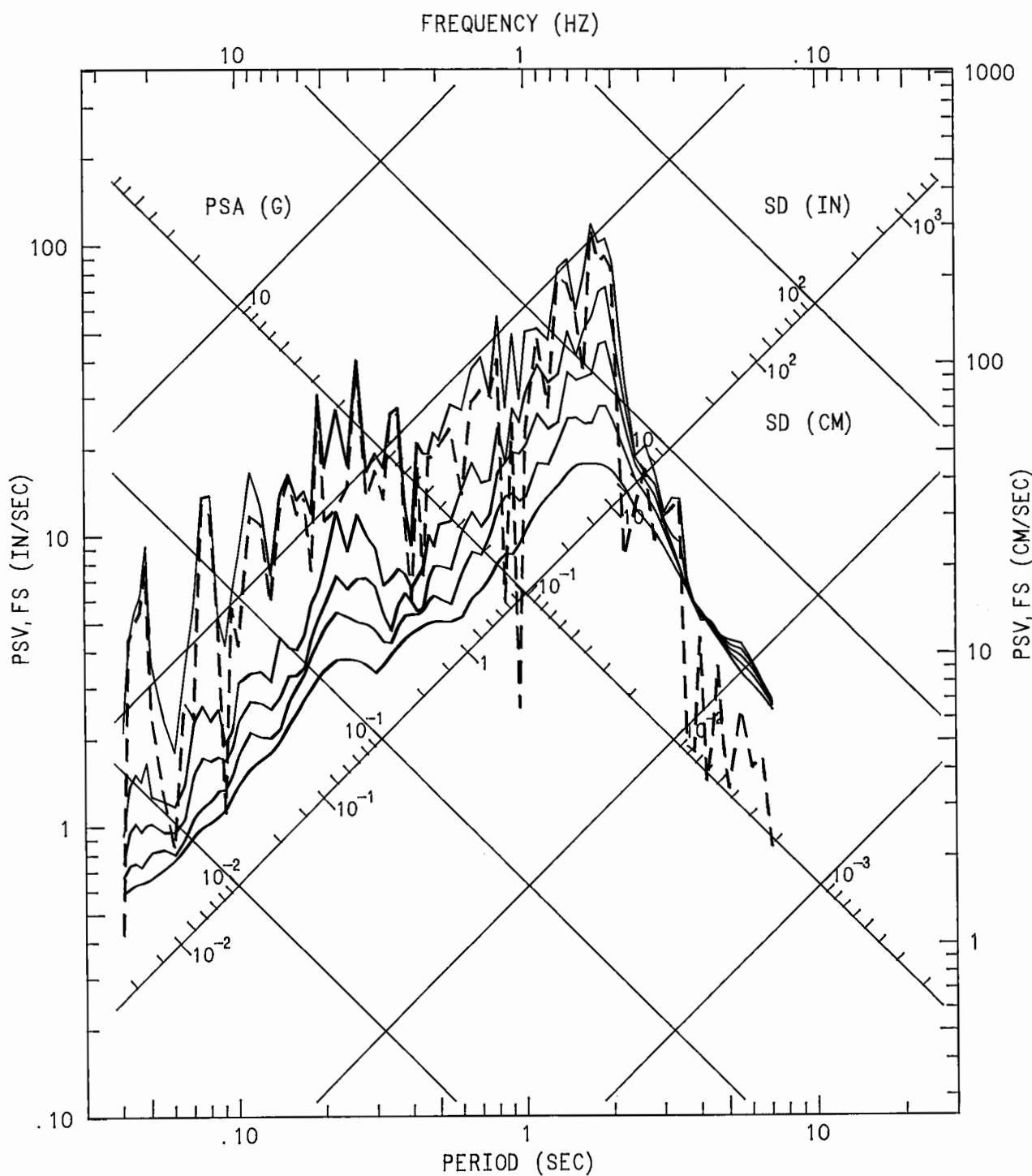
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 8): TRAN (HINGE NEAR BENT 3, E. SIDE)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0776-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

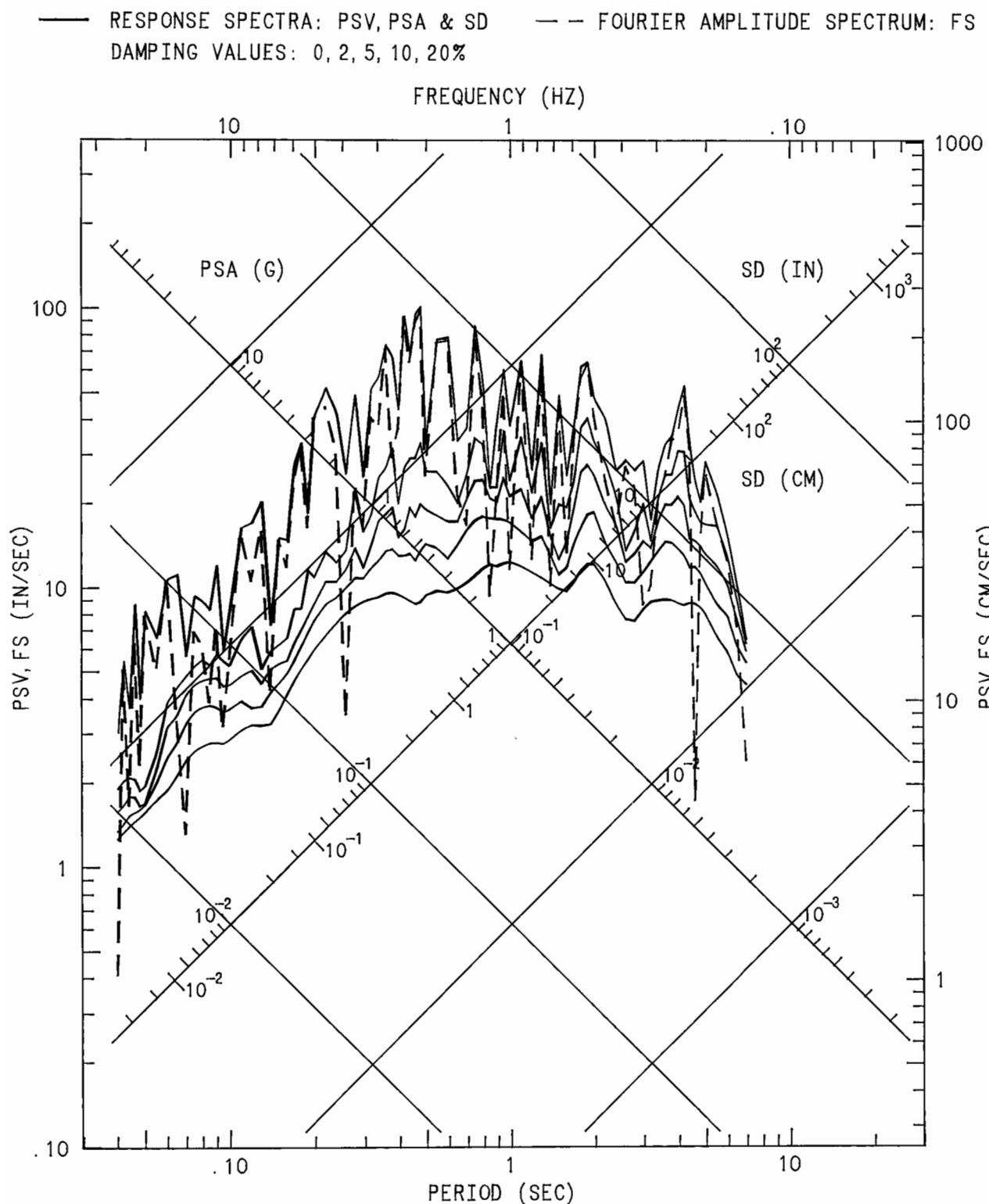


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 9): UP (BENT 7, DECK)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0777-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

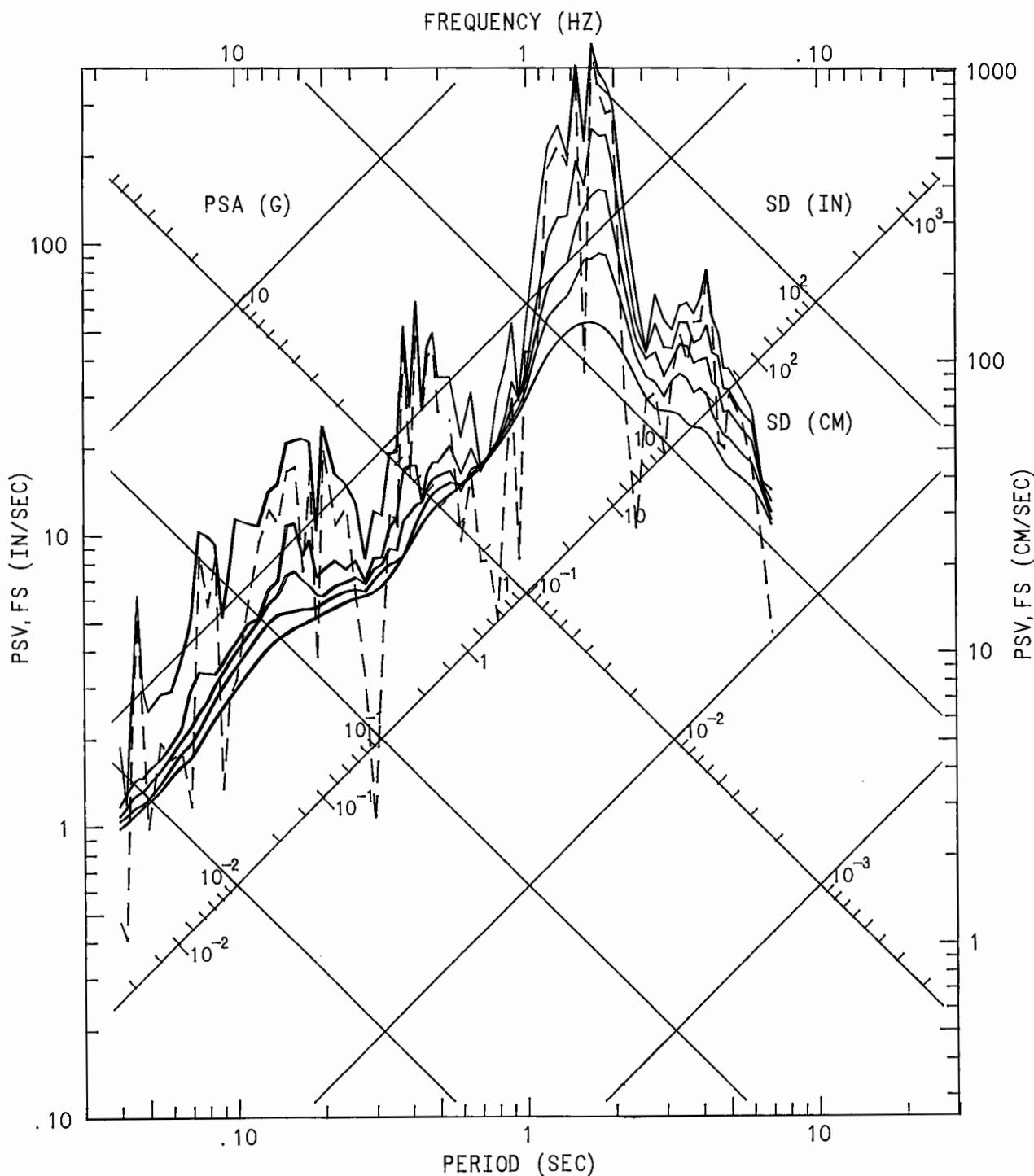


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 10): LONG (HINGE NEAR BENT 3, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0777-92180.04 100693.1432-COLTON.V3



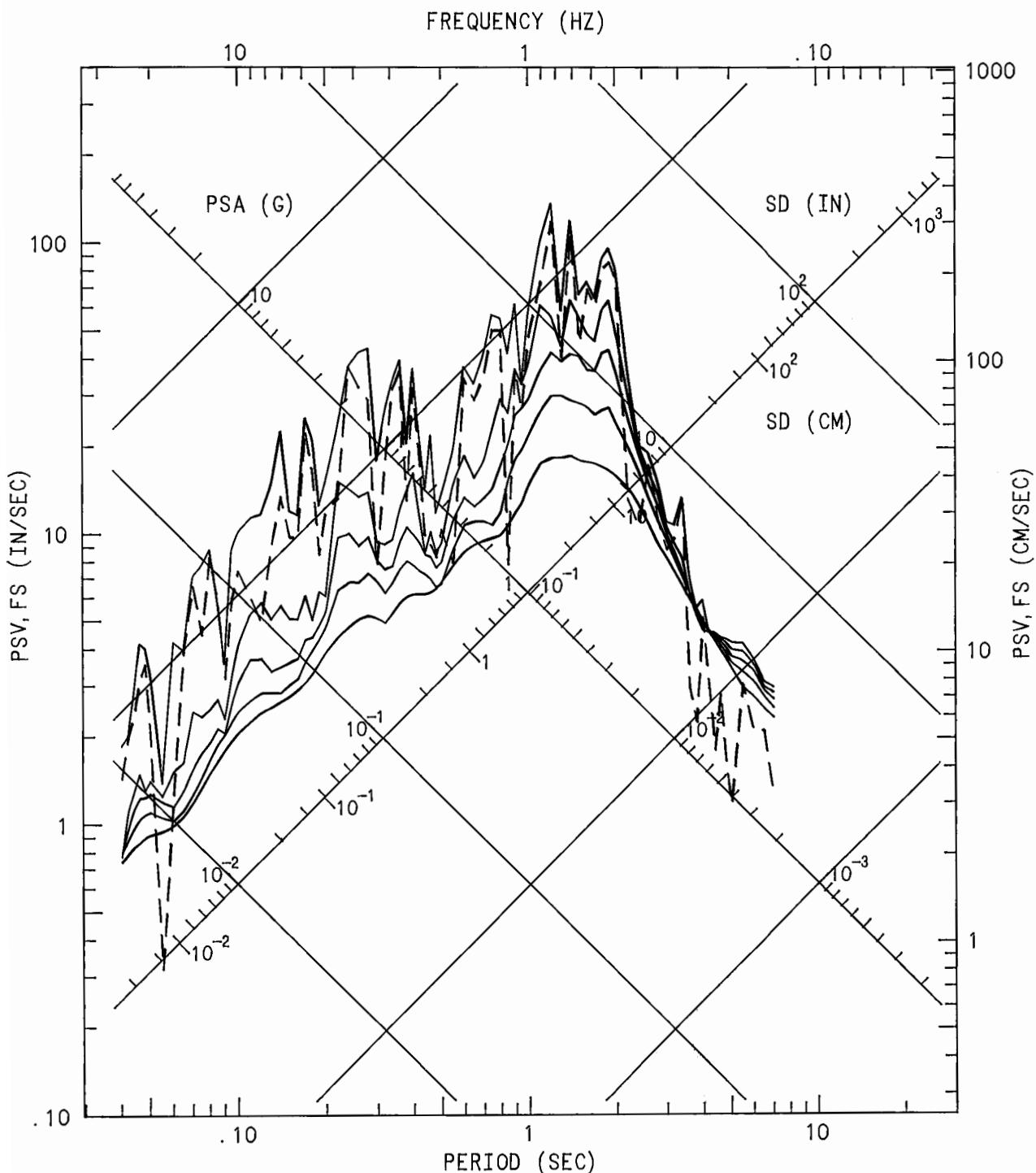
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 11): TRAN (DECK BETWEEN BENTS 5 & 6, MID-SPAN)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-E0777-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



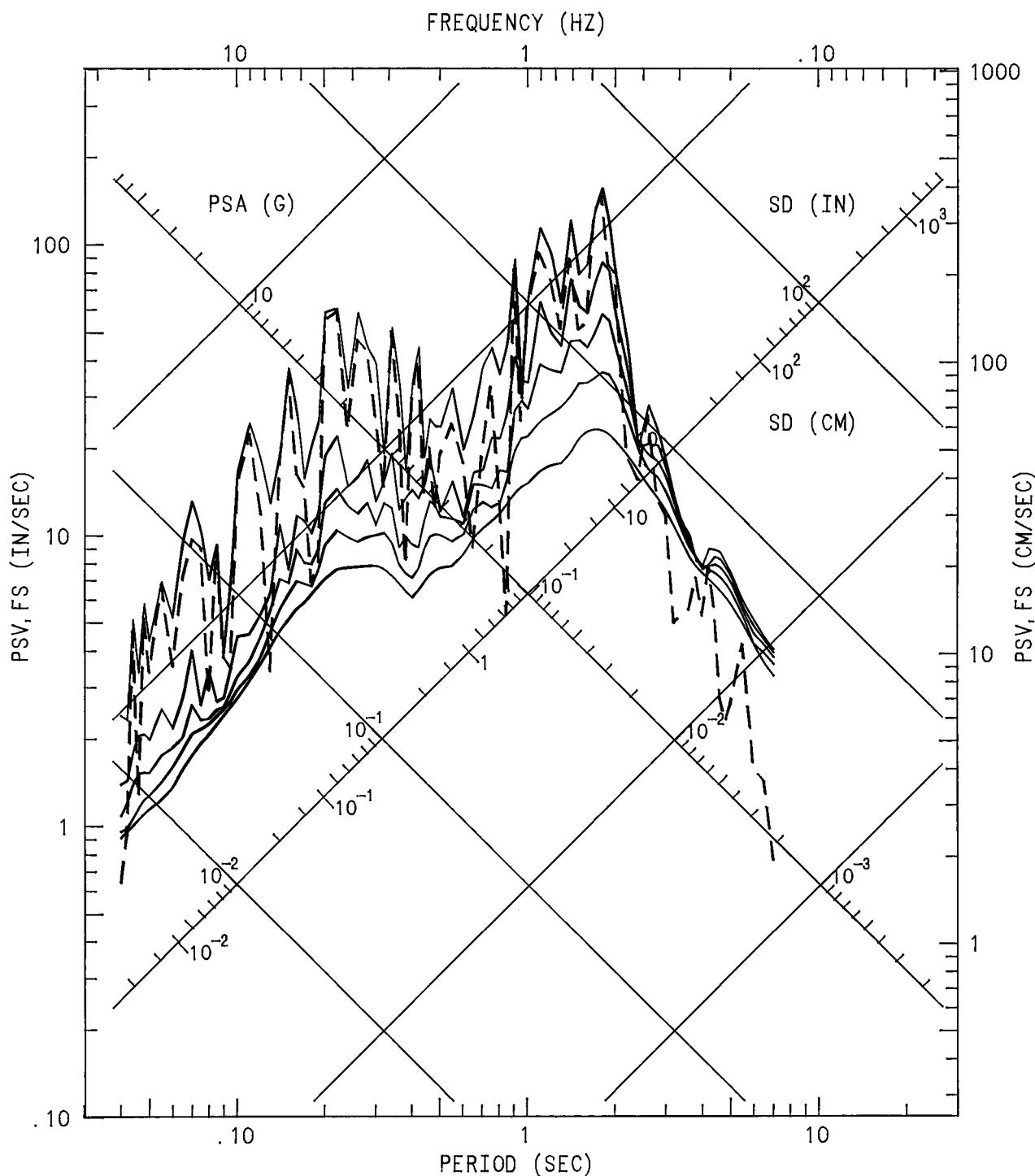
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
CHN 4 (STA CHN 12): UP (BENT 8, DECK, N. SIDE)  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0777-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
DAMPING VALUES: 0, 2, 5, 10, 20%



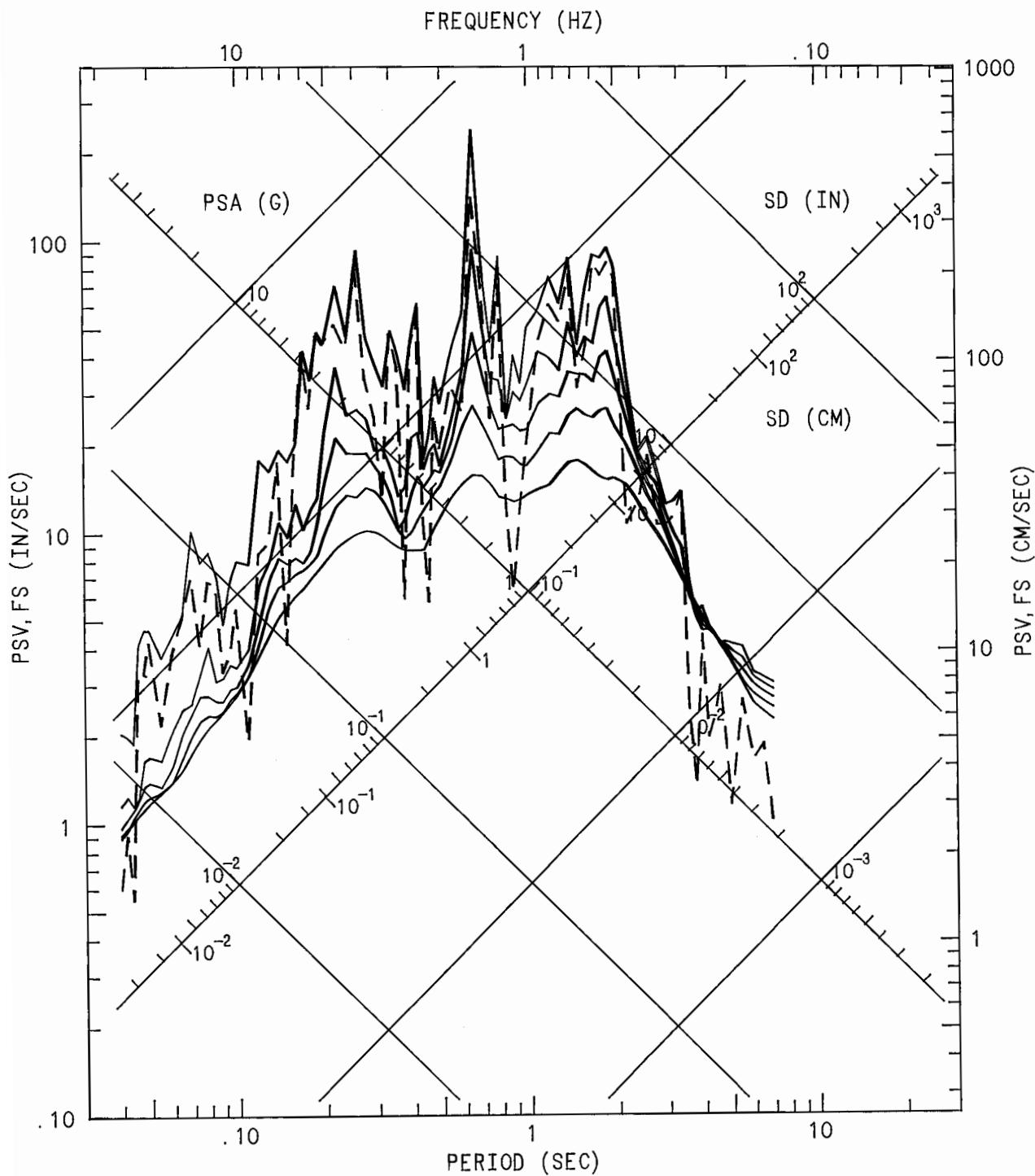
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 13): UP (BENT 8, DECK, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0778-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



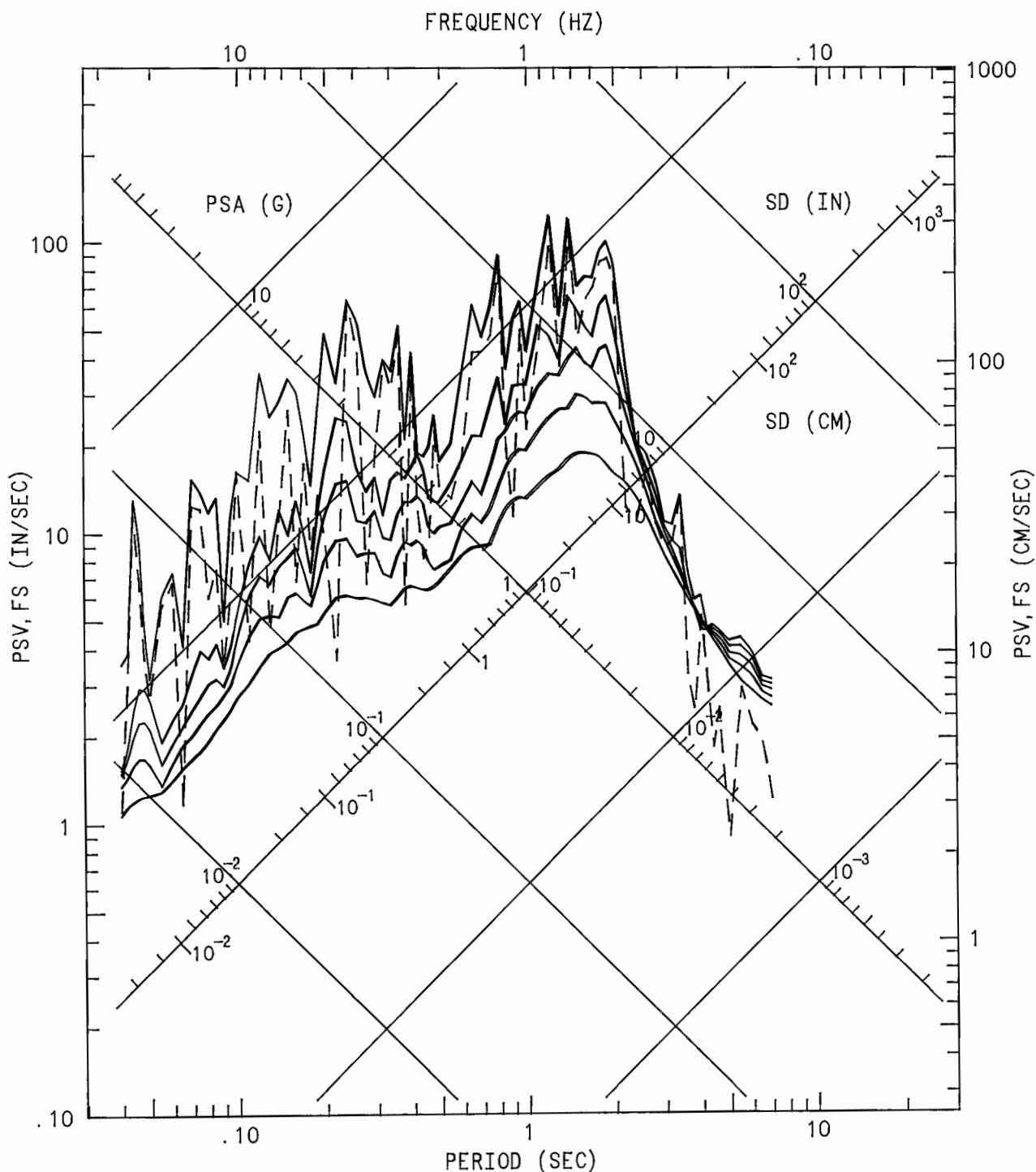
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 14): UP (DECK BETWEEN BENTS 7 & 8, MID-SPAN)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0778-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



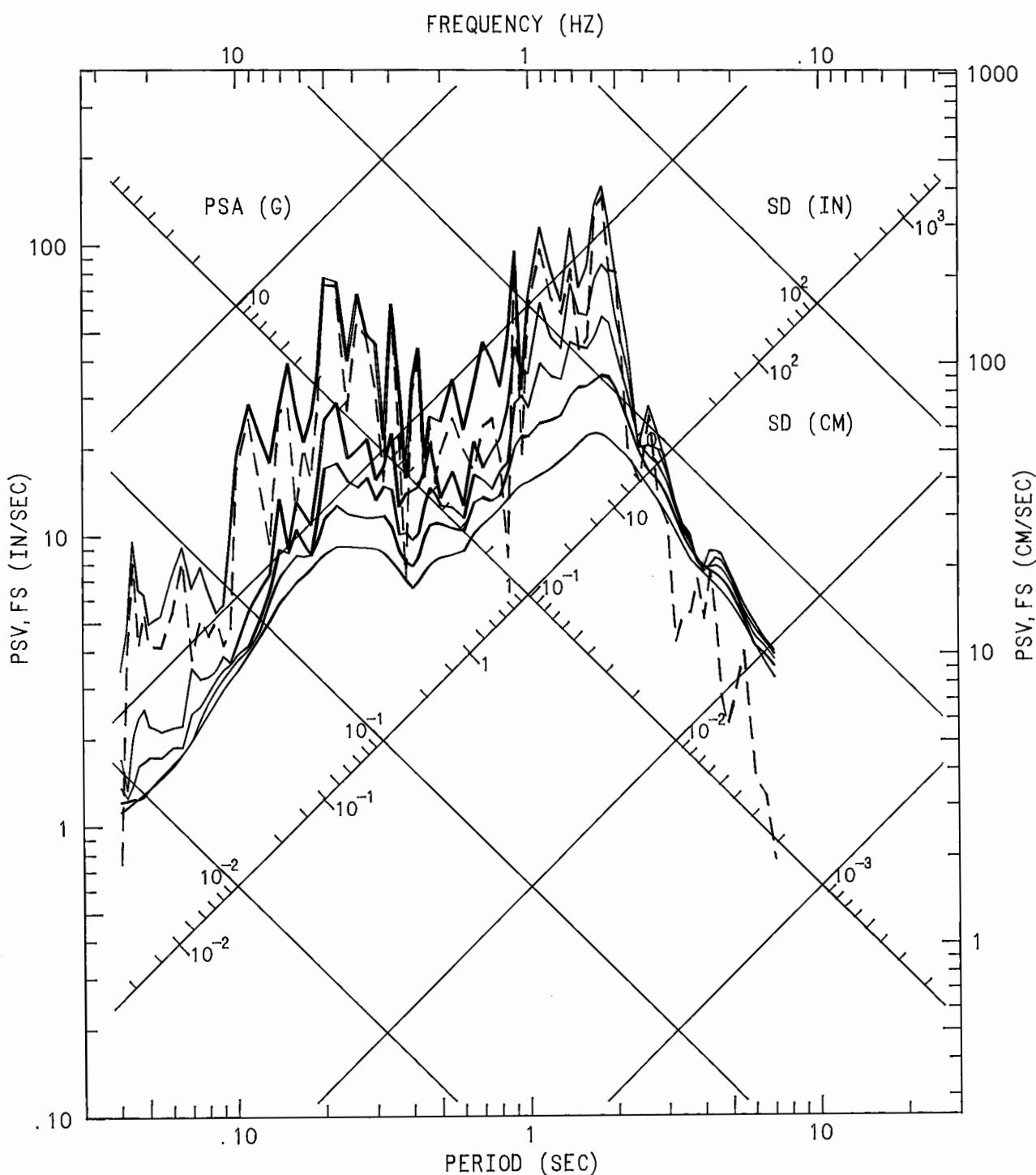
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 15): UP (HINGE NEAR BENT 8, N. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0778-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



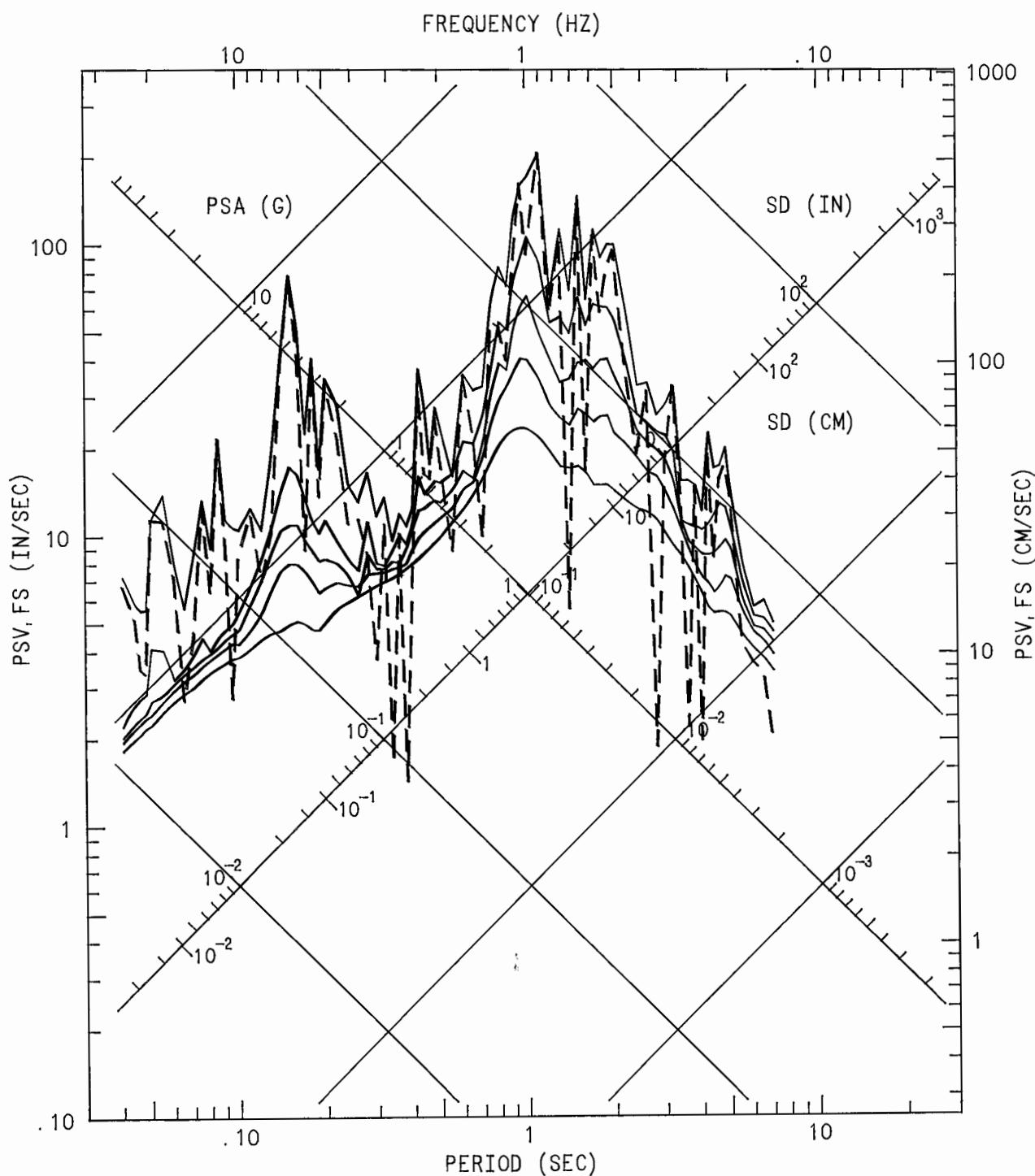
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 16): UP (HINGE NEAR BENT 8, S. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0778-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



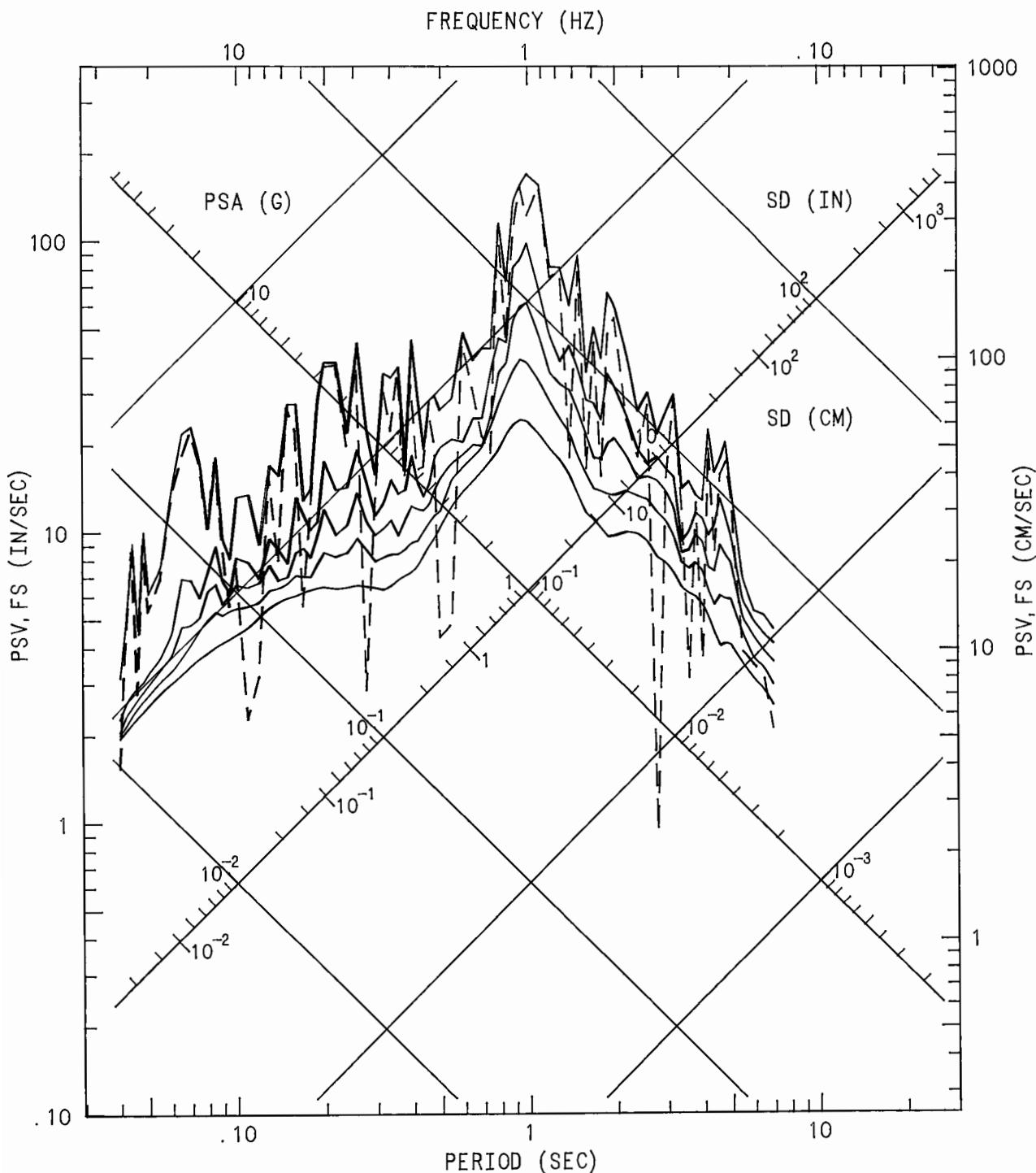
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 17): LONG (HINGE NEAR BENT 8, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0779-92180.04 100693.1432-COLTON. V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



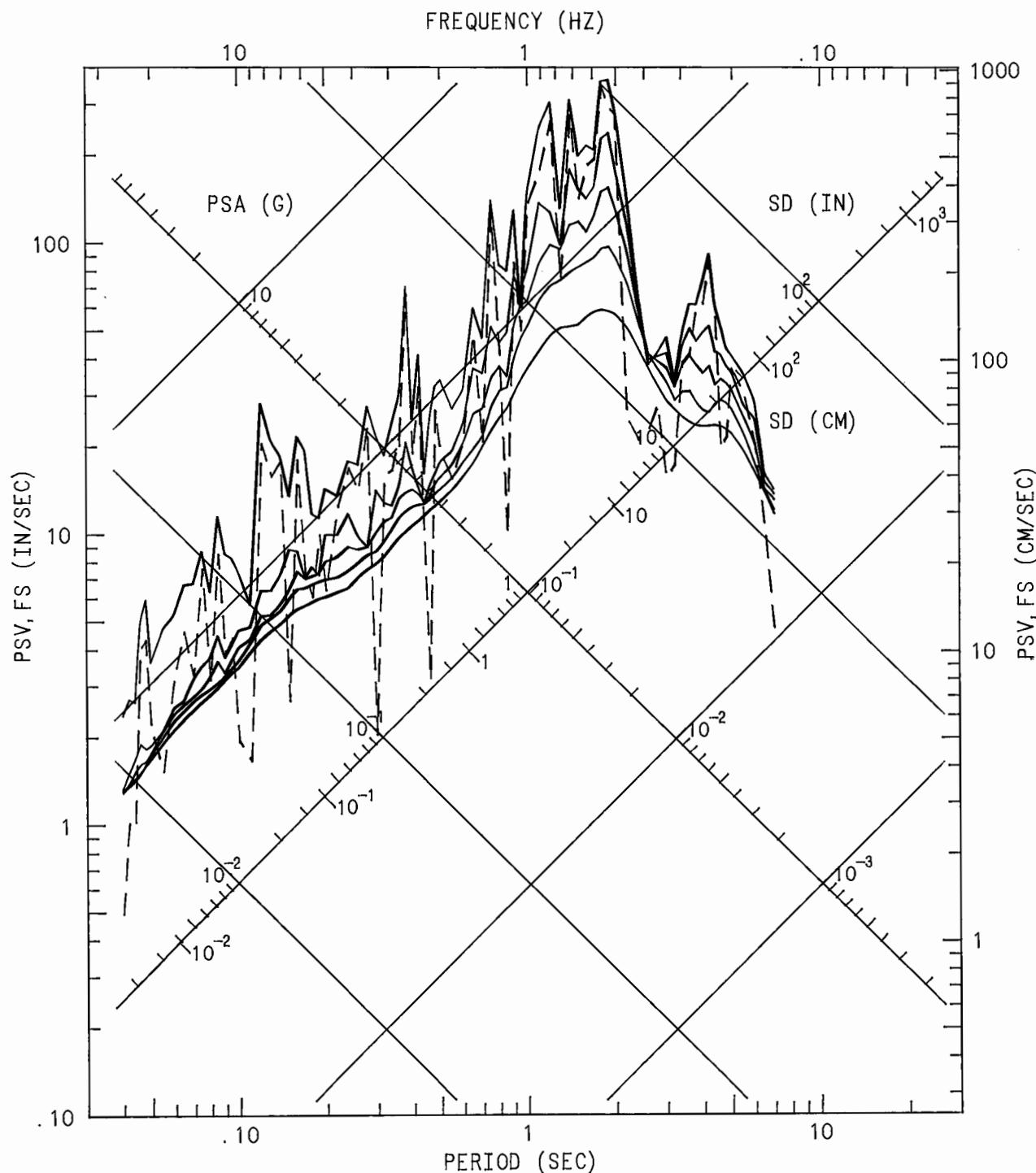
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 18): LONG (HINGE NEAR BENT 8, E. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0779-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

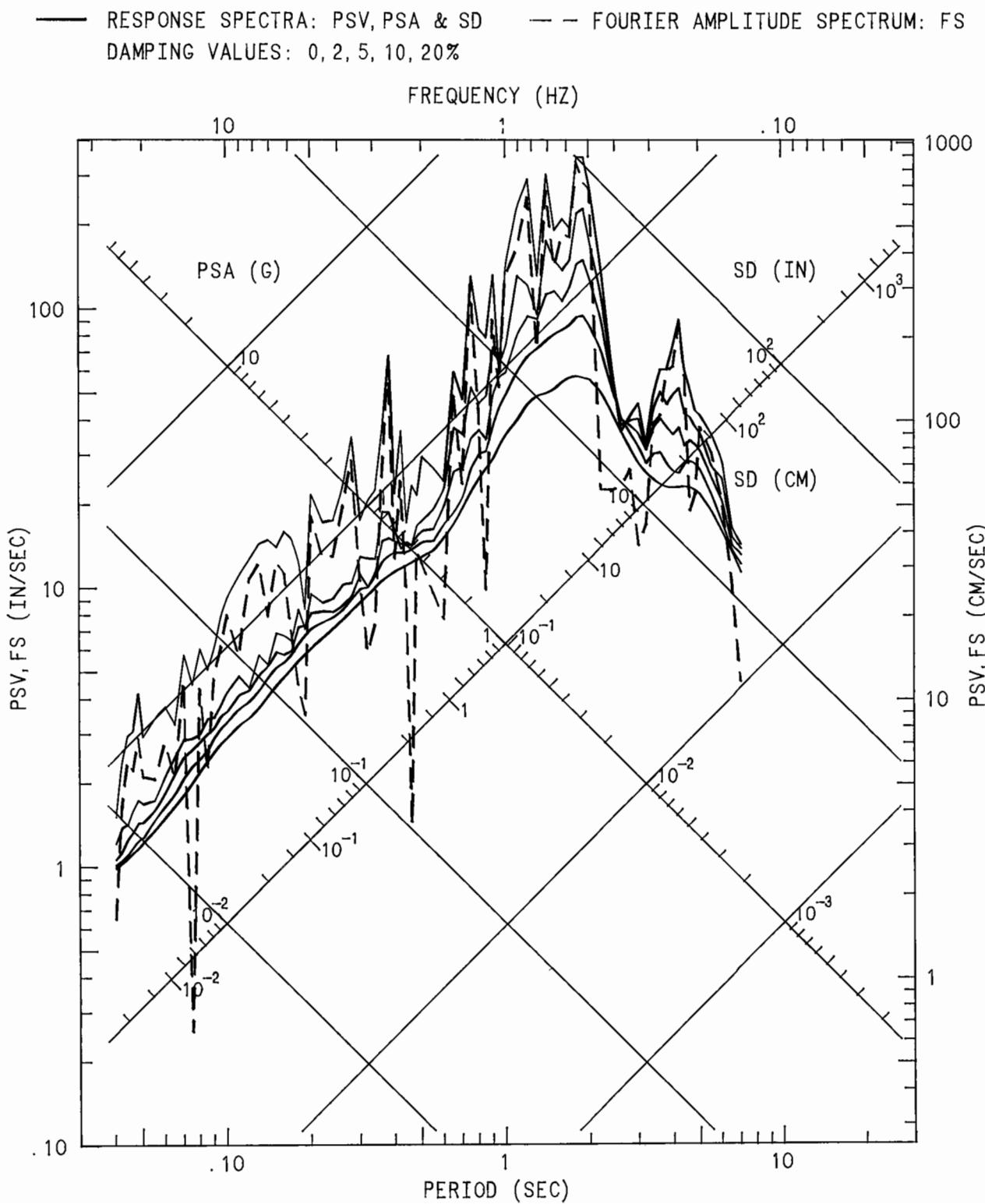


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 19): TRAN (HINGE NEAR BENT 8, W. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0779-92180.04 100693.1432-COLTON.V3

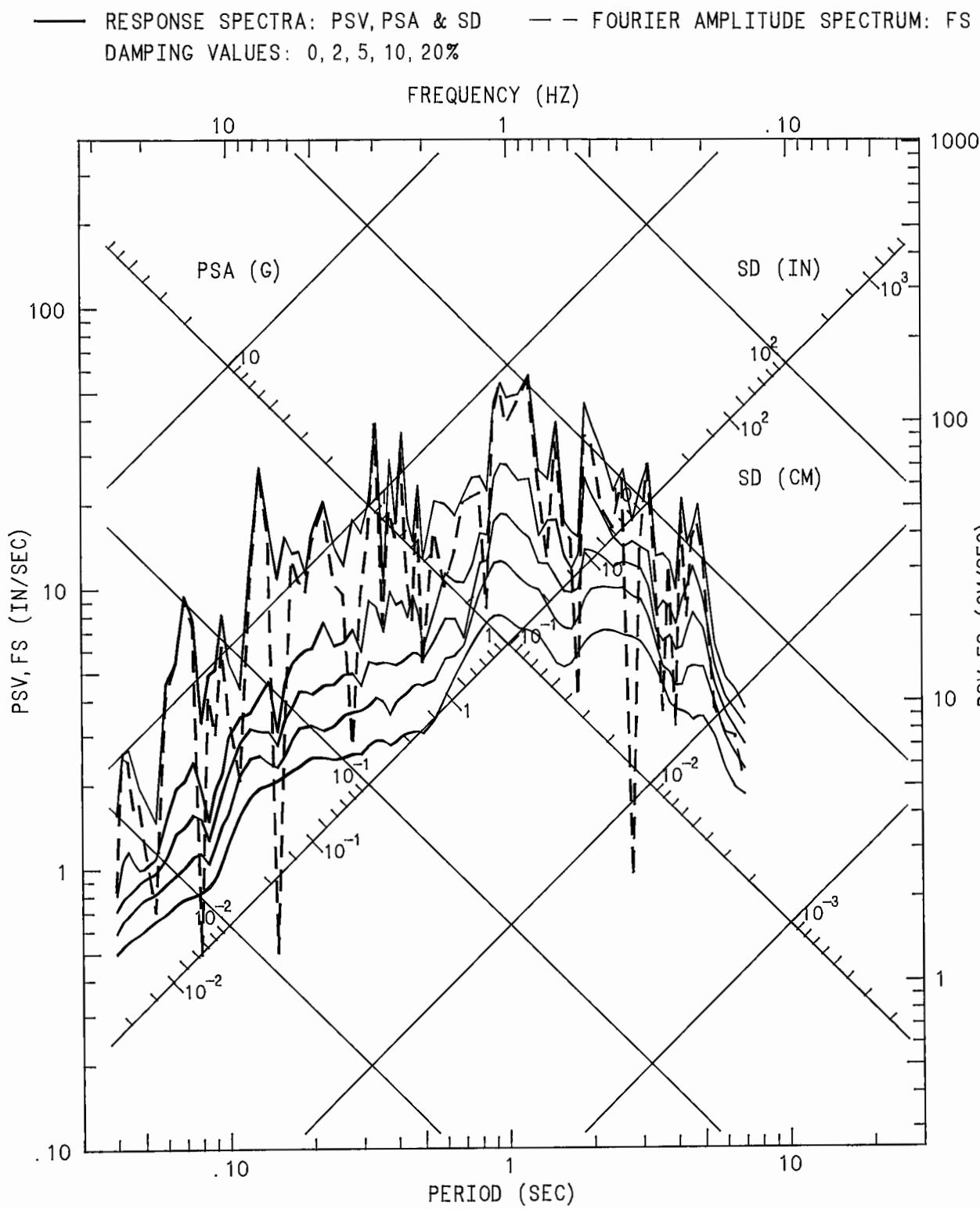
— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 20): TRAN (HINGE NEAR BENT 8, E. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0779-92180.04 100693.1432-COLTON.V3

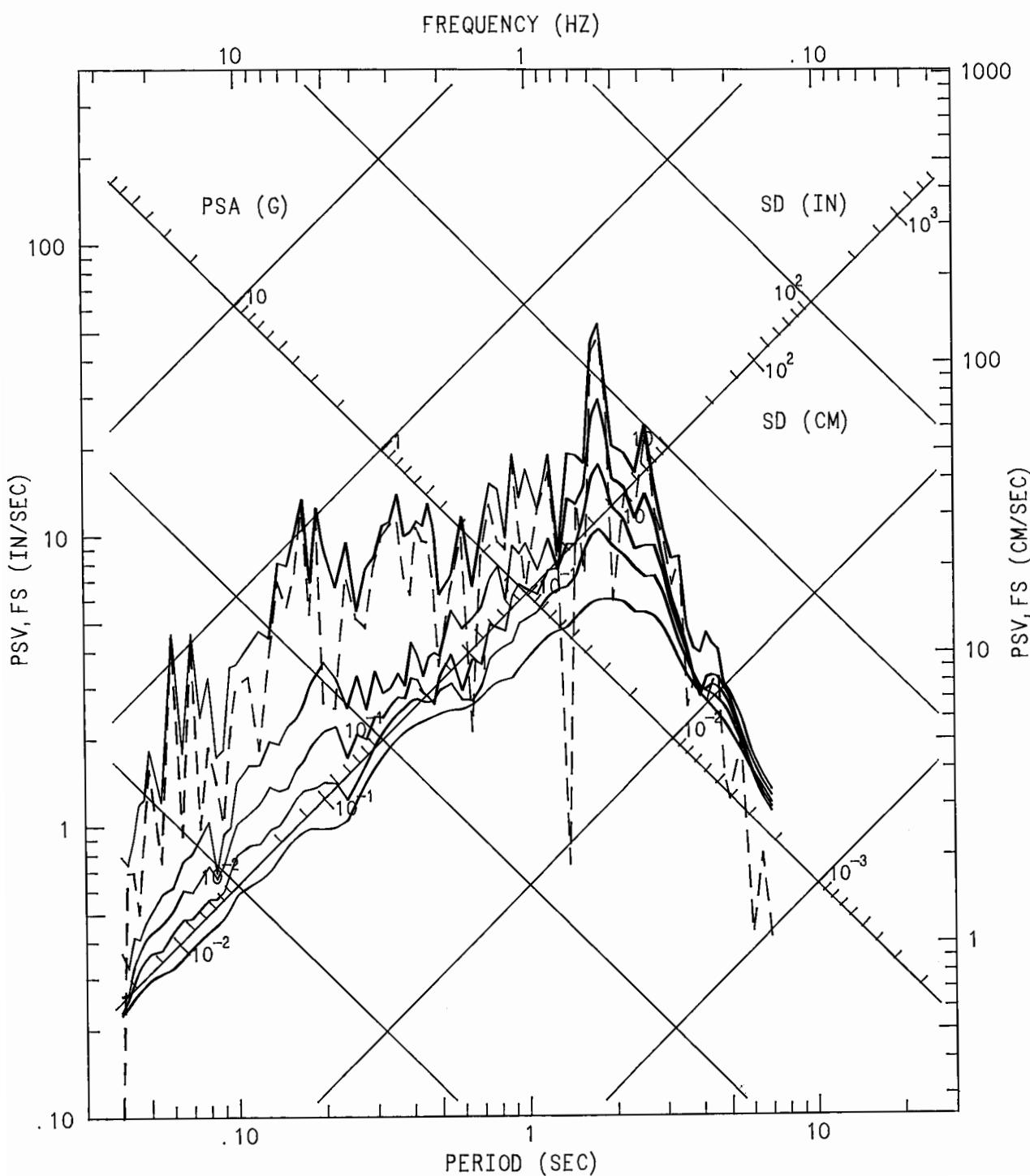


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 22): LONG (BENT 8, FOOTING, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0780-92180.04 100693.1432-COLTON.V3

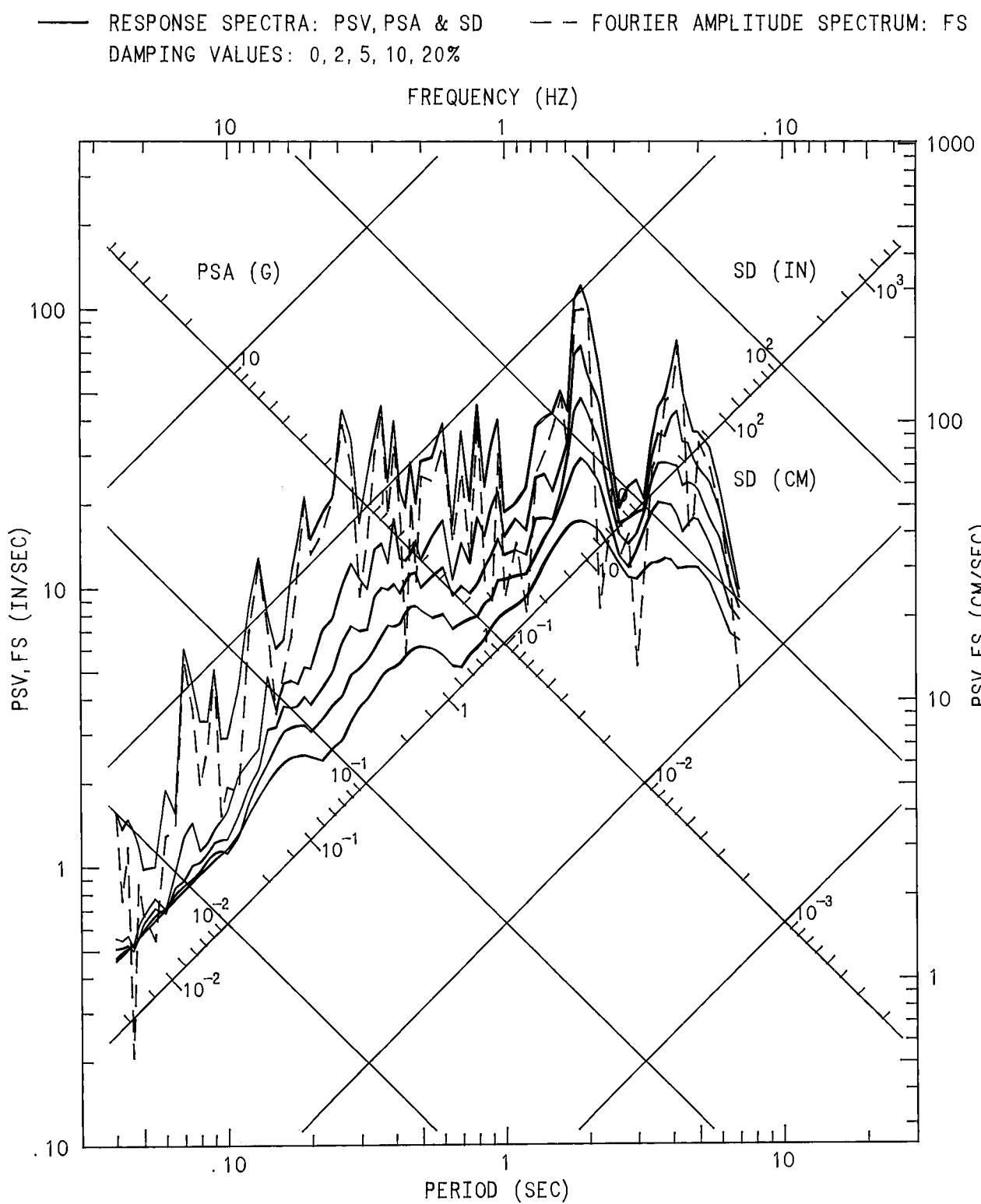


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 23): UP (BENT 8, FOOTING, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-E0780-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

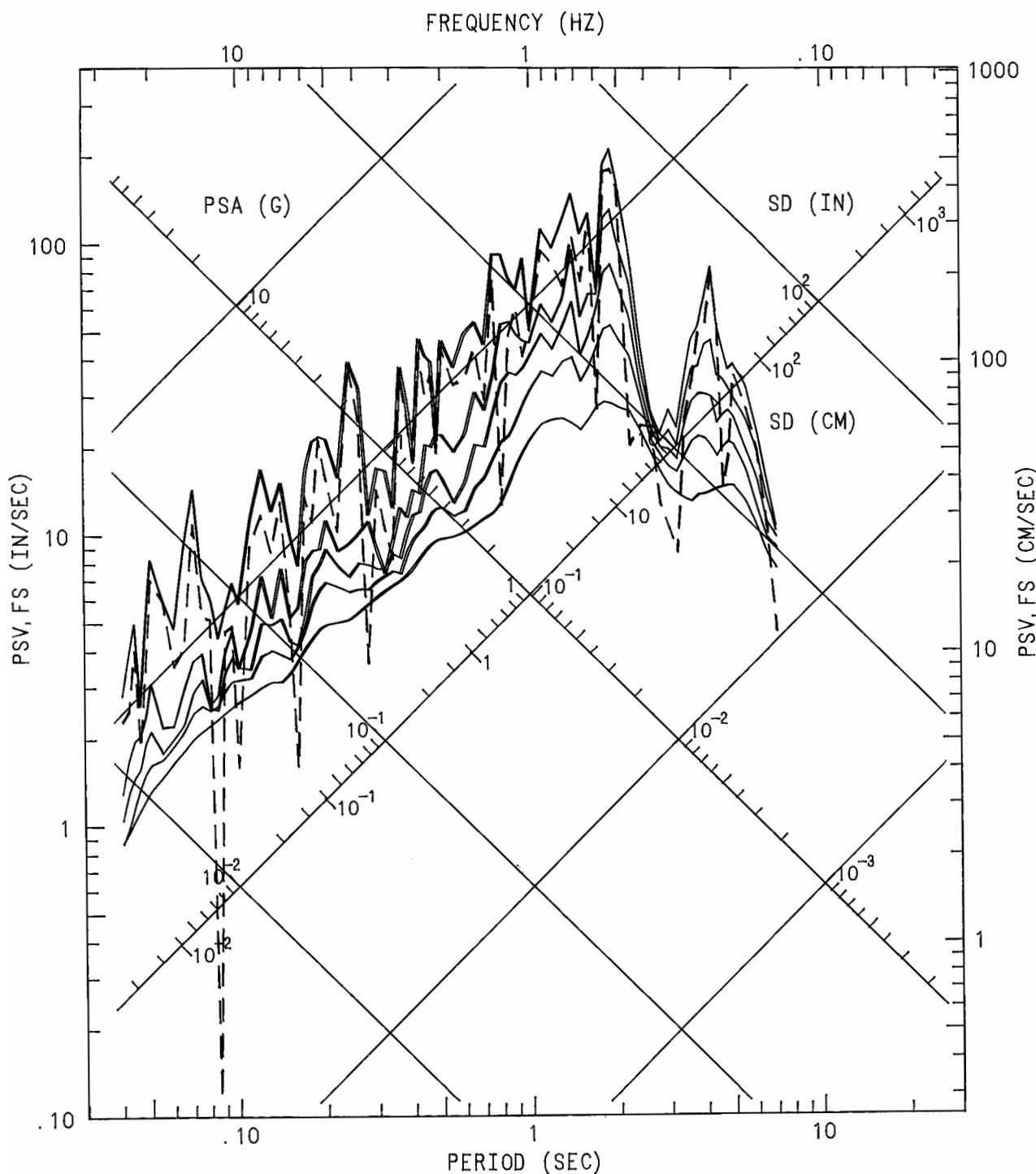


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 24): TRAN (BENT 8, FOOTING, S. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0780-92180.04 100693.1432-COLTON.V3



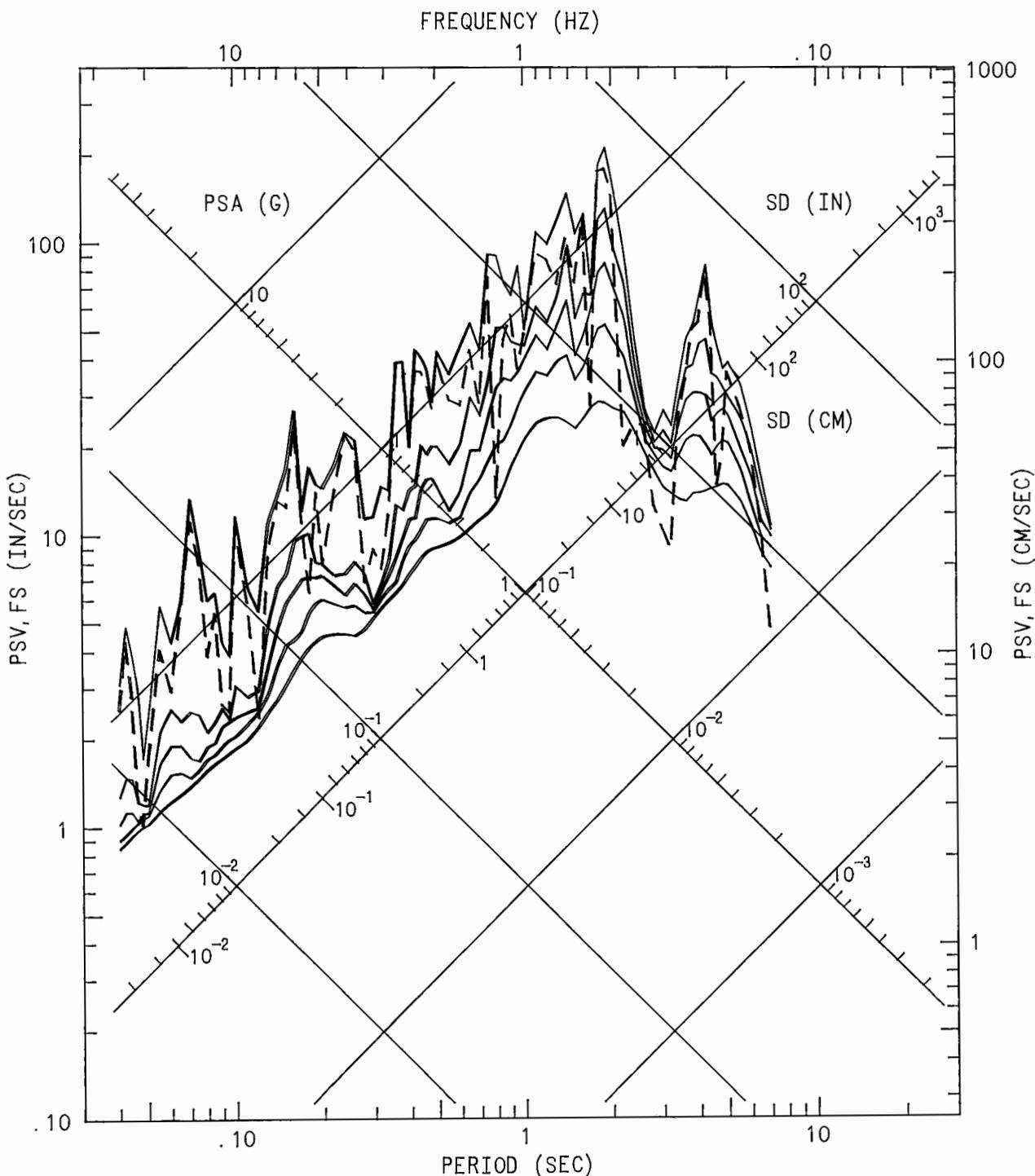
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 25): TRAN (HINGE NEAR BENT 10, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0781-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

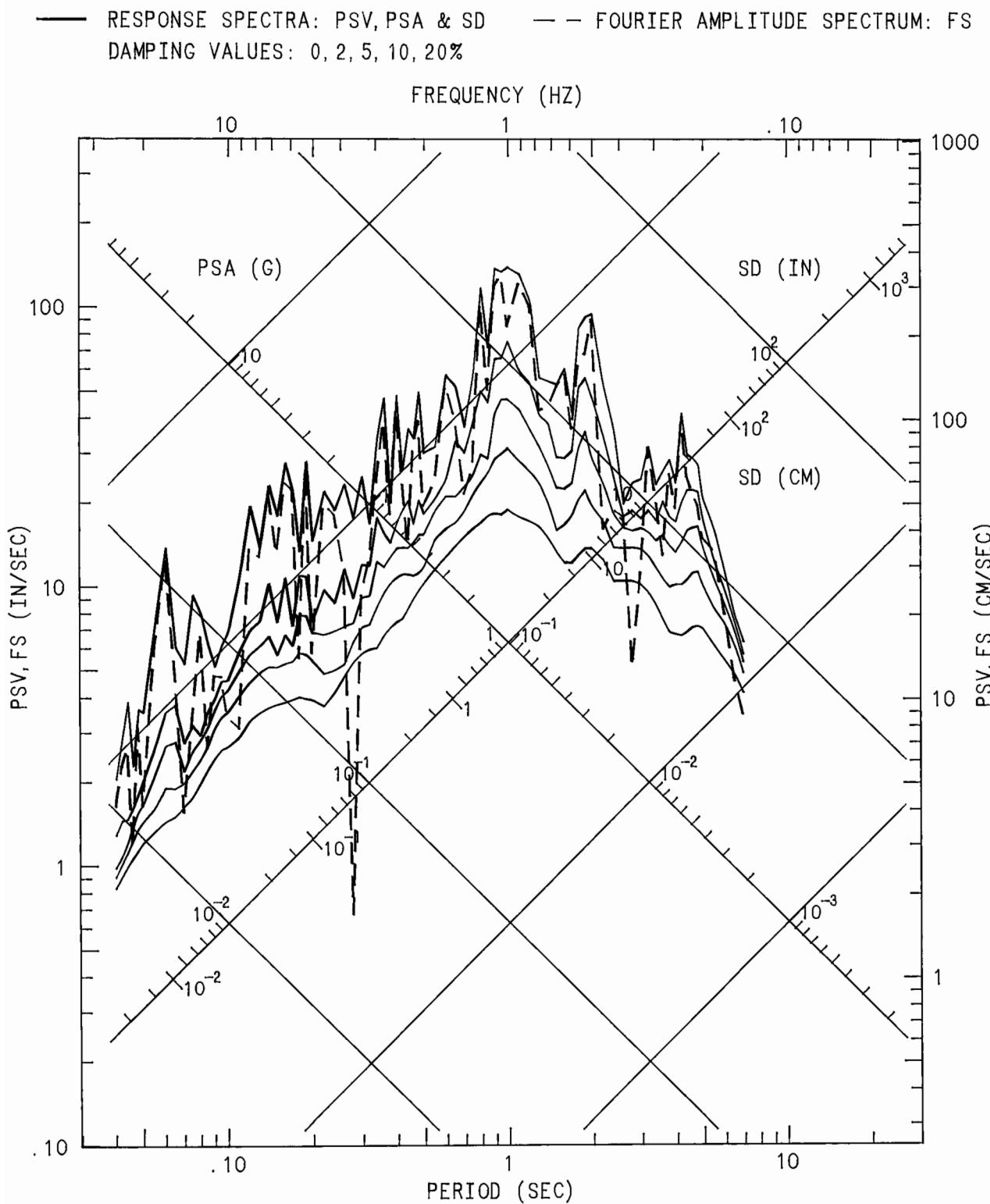


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 26): TRAN (HINGE NEAR BENT 10, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0781-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

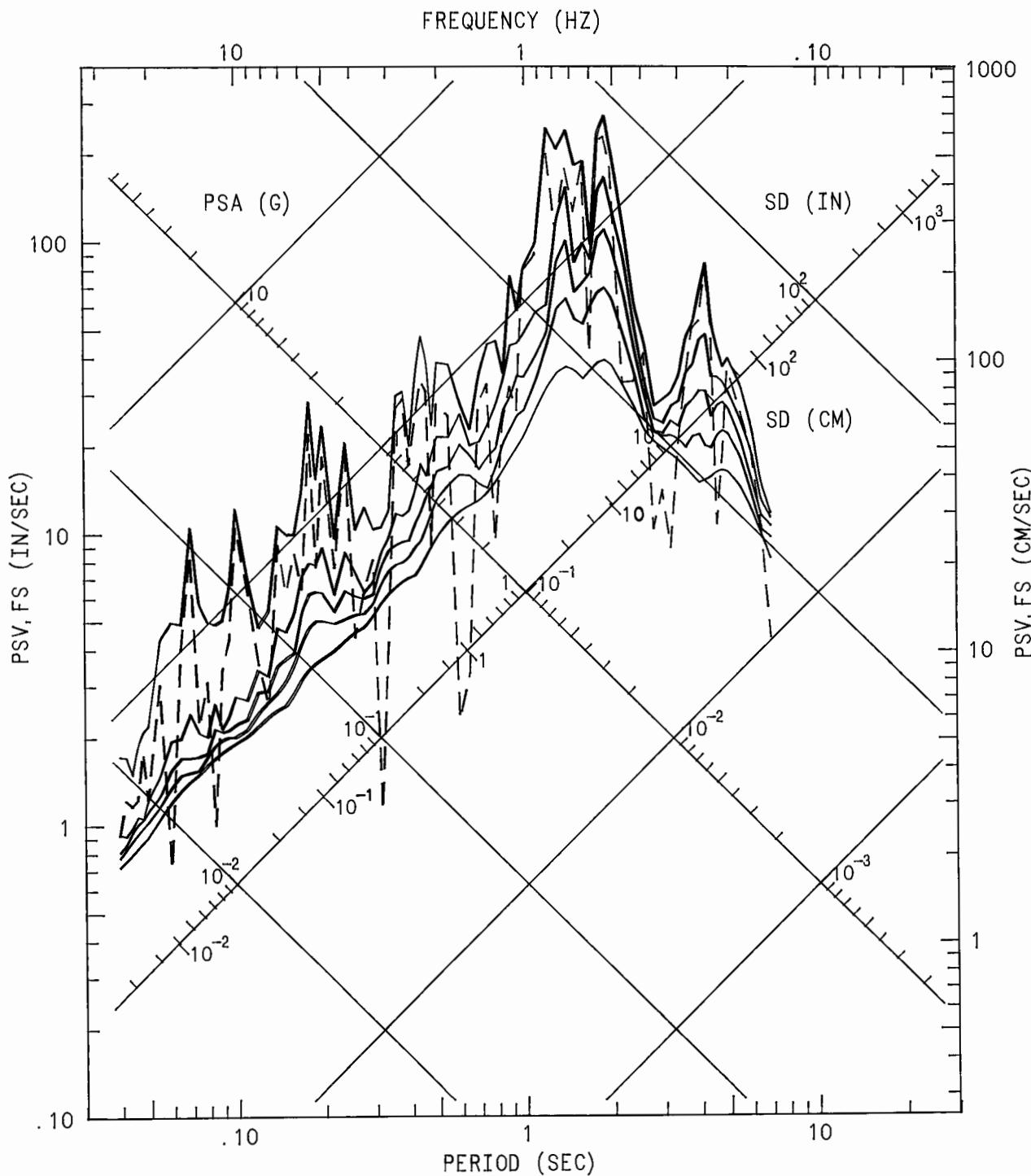


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 28): LONG (HINGE NEAR BENT 11, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0781-92180.04 100693.1432-COLTON.V3



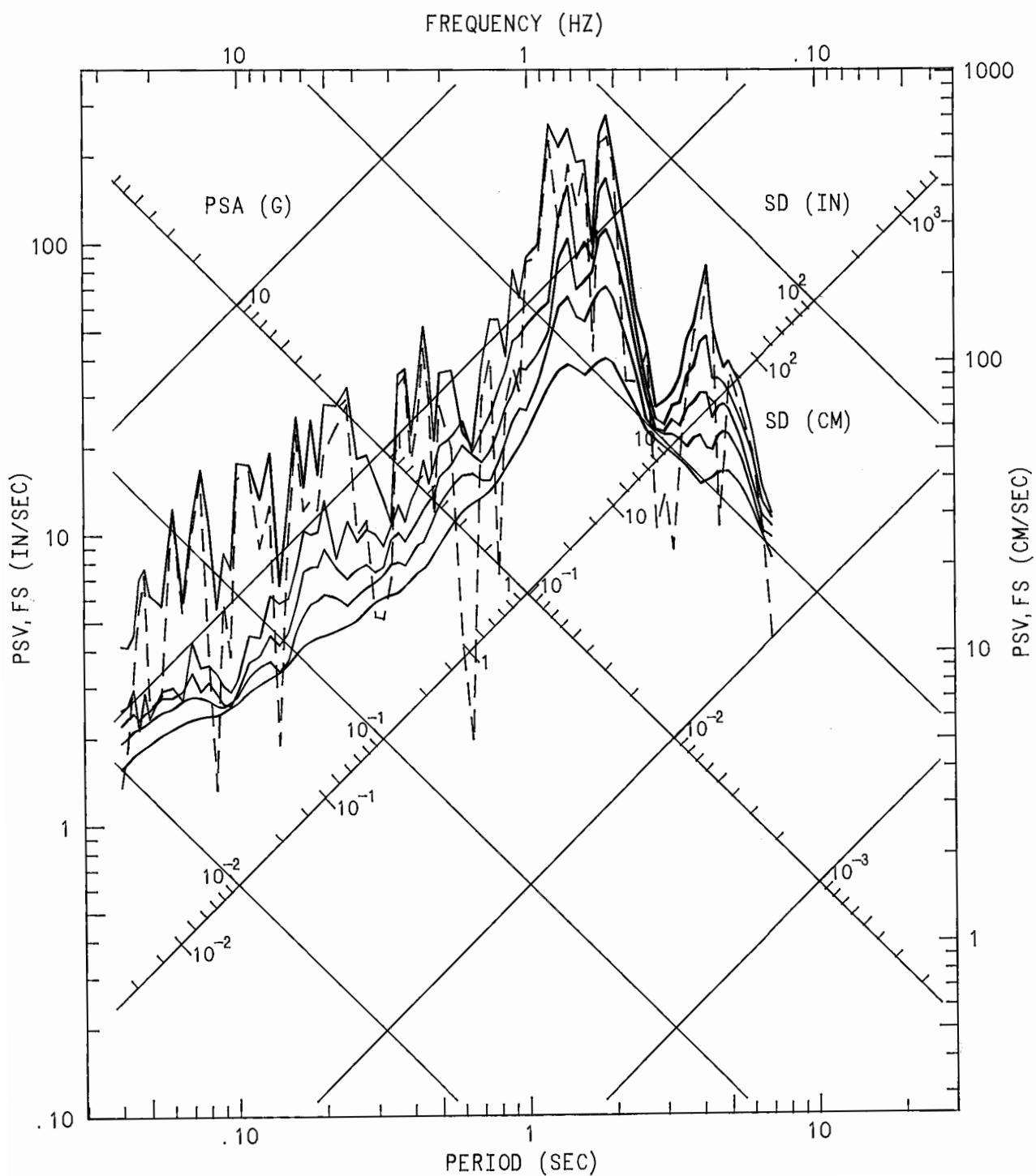
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 29): TRAN (HINGE NEAR BENT 11, W. SIDE)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0782-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



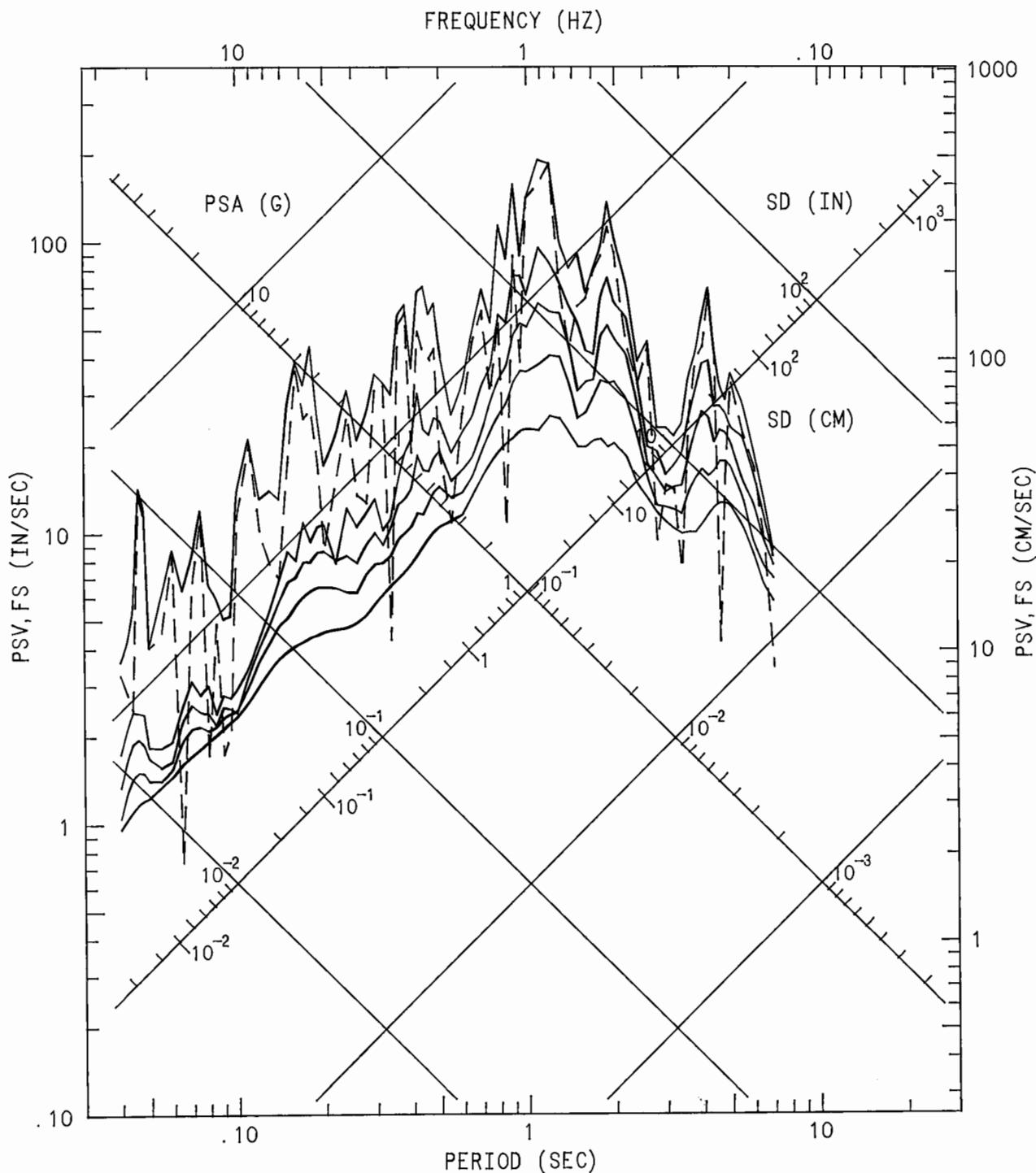
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 30): TRAN (HINGE NEAR BENT 11, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0782-92180.04 100693.1432-COLTON.V3

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

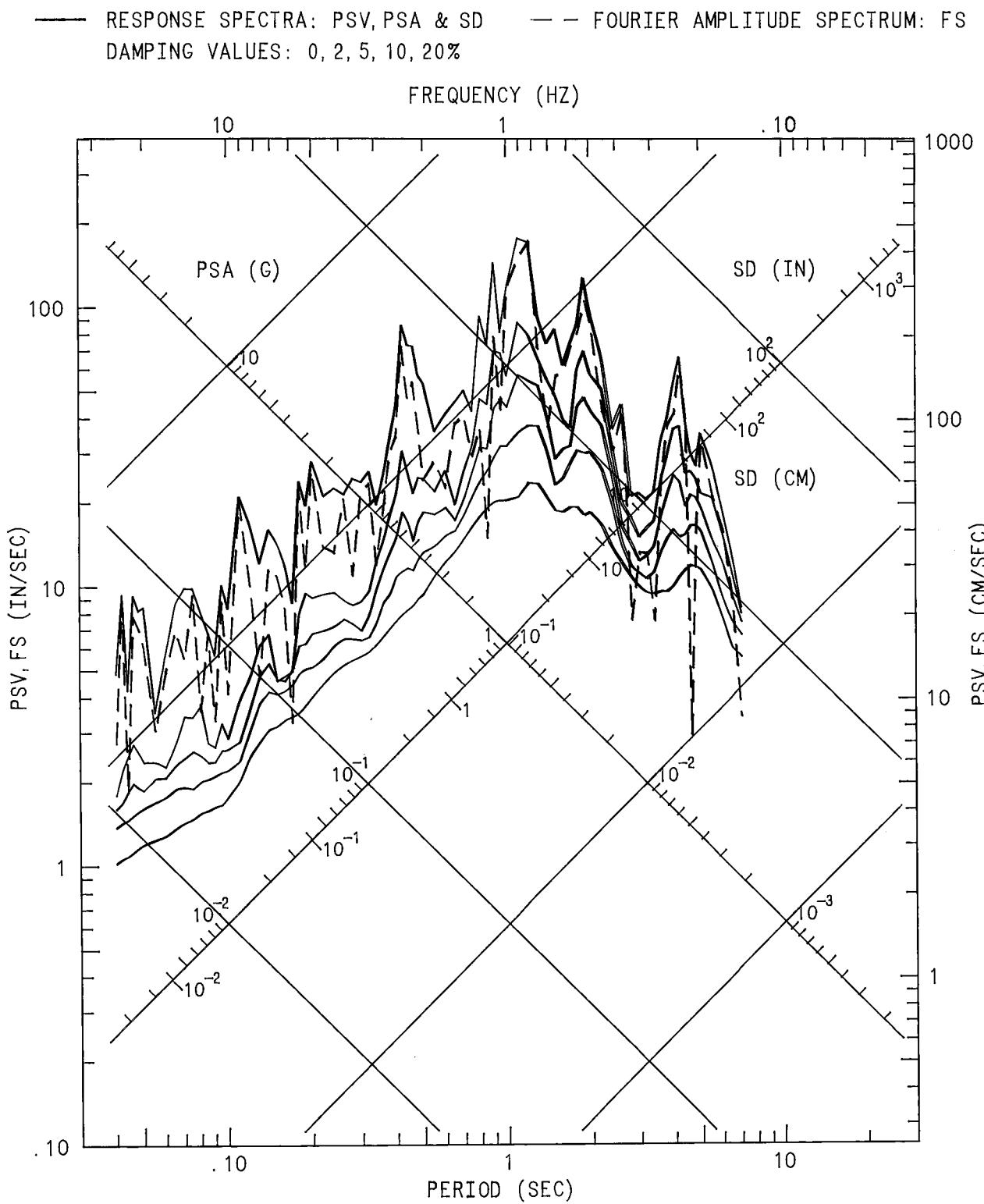


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 31): TRAN (HINGE NEAR BENT 14, W. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0782-92180.04 100693.1432-COLTON.V3

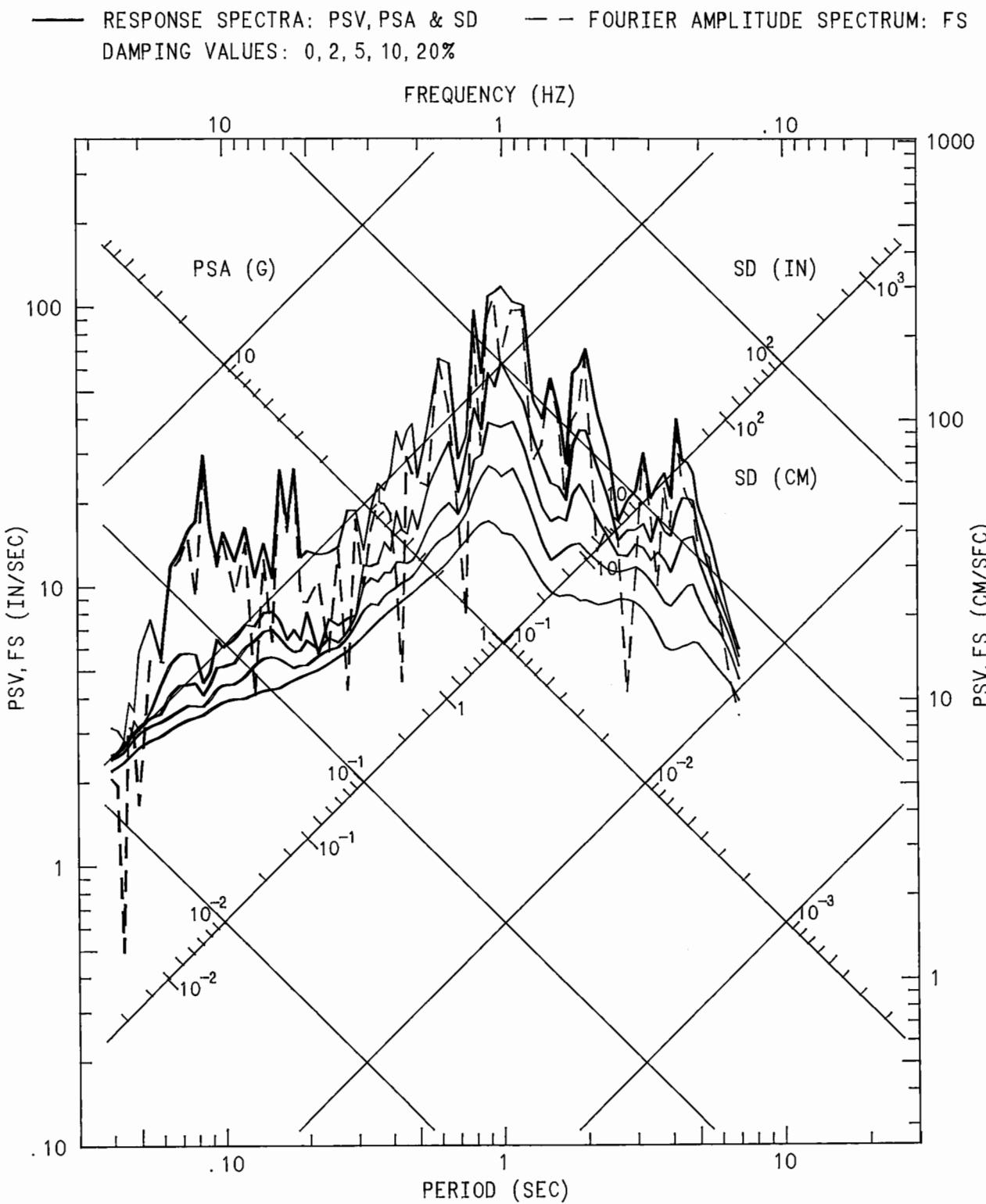
— RESPONSE SPECTRA: PSV, PSA & SD      —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 32): TRAN (HINGE NEAR BENT 14, E. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0782-92180.04 100693.1432-COLTON.V3

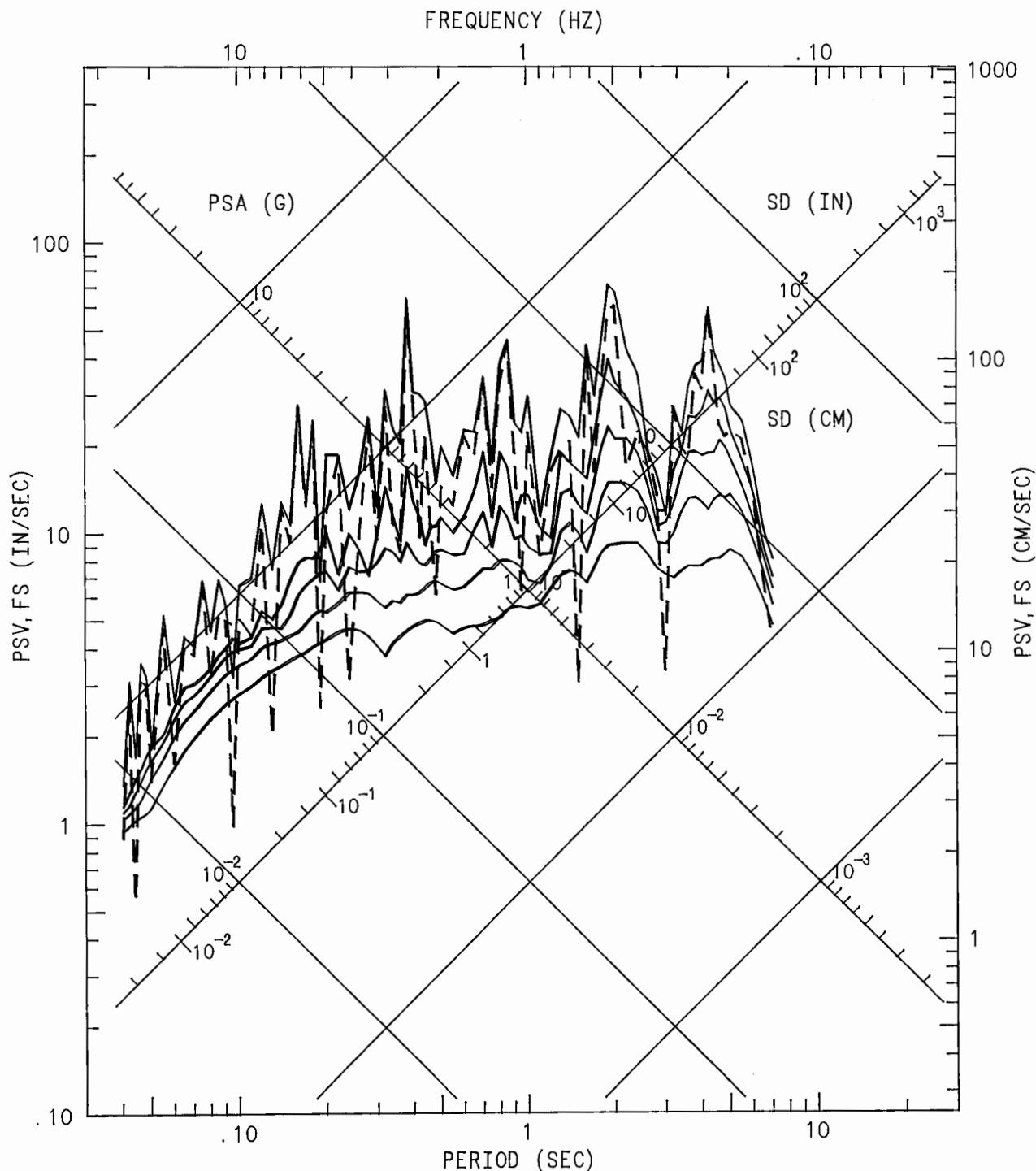


LANDERS EARTHQUAKE      JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 33): LONG (HINGE NEAR BENT 11, E. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0783-92180.04 032993.1211-COLTON.V3

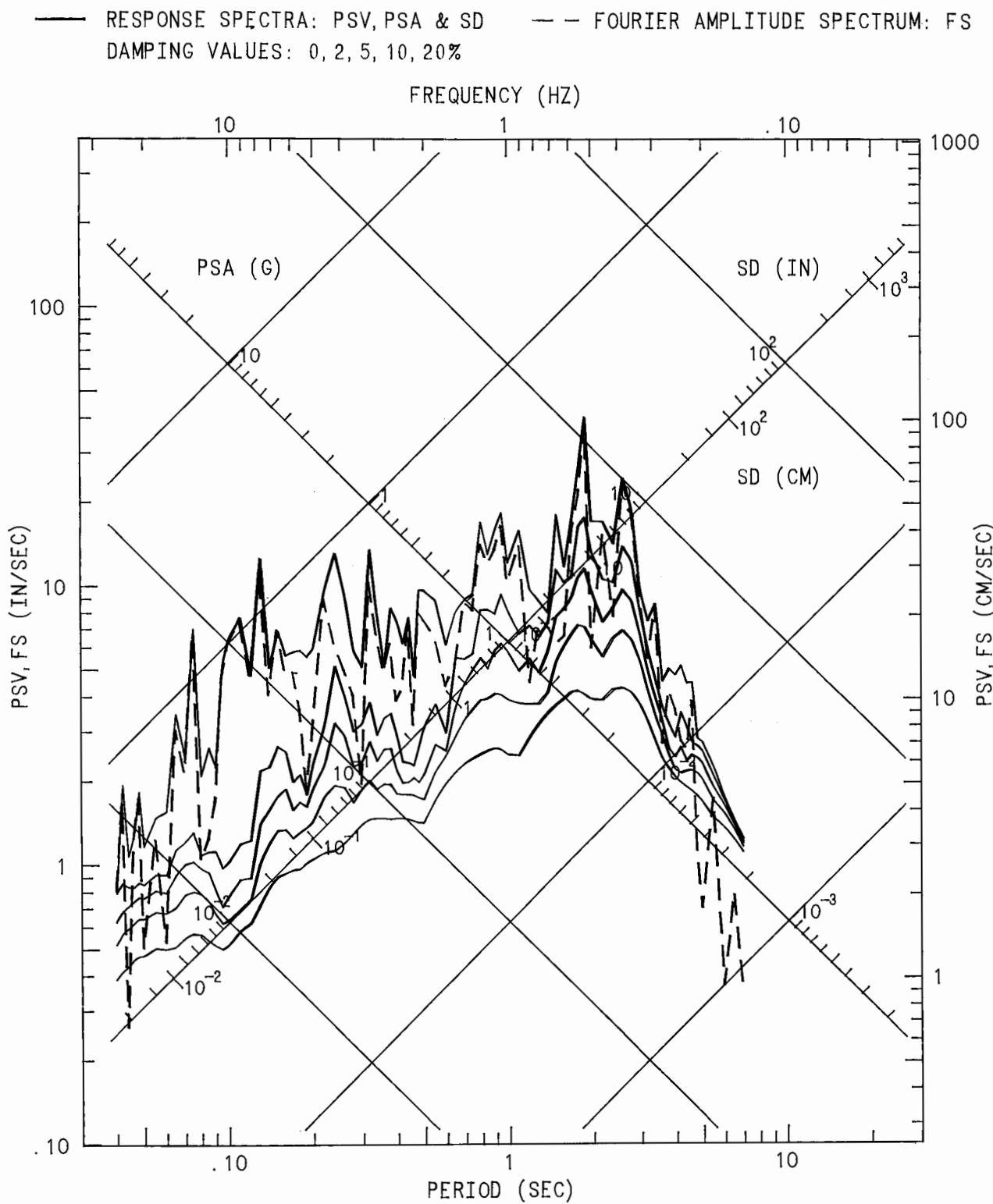


LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 34): LONG (NORTH ABUTMENT)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0783-92180.04 100693.1432-COLTON.V3

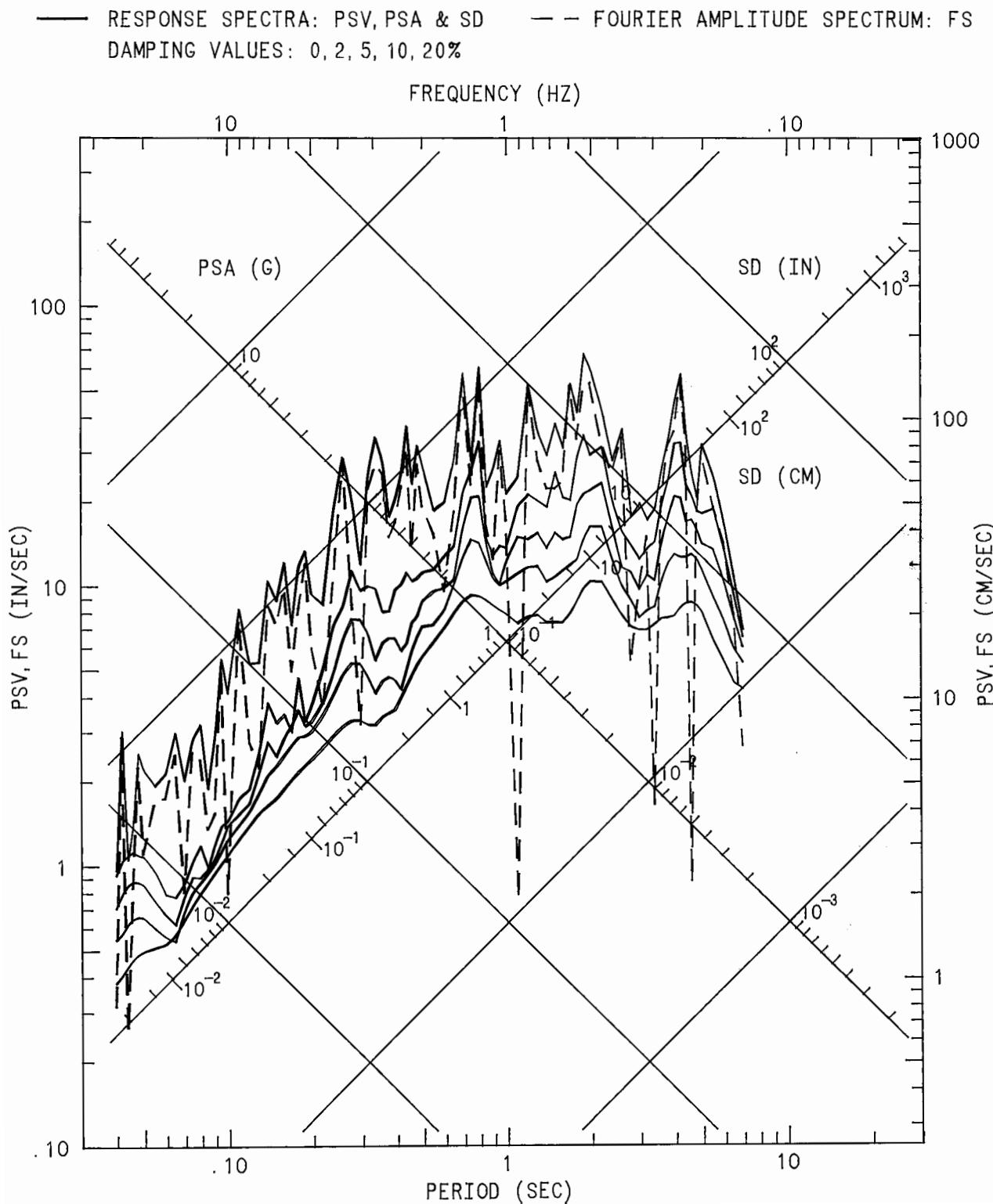
— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



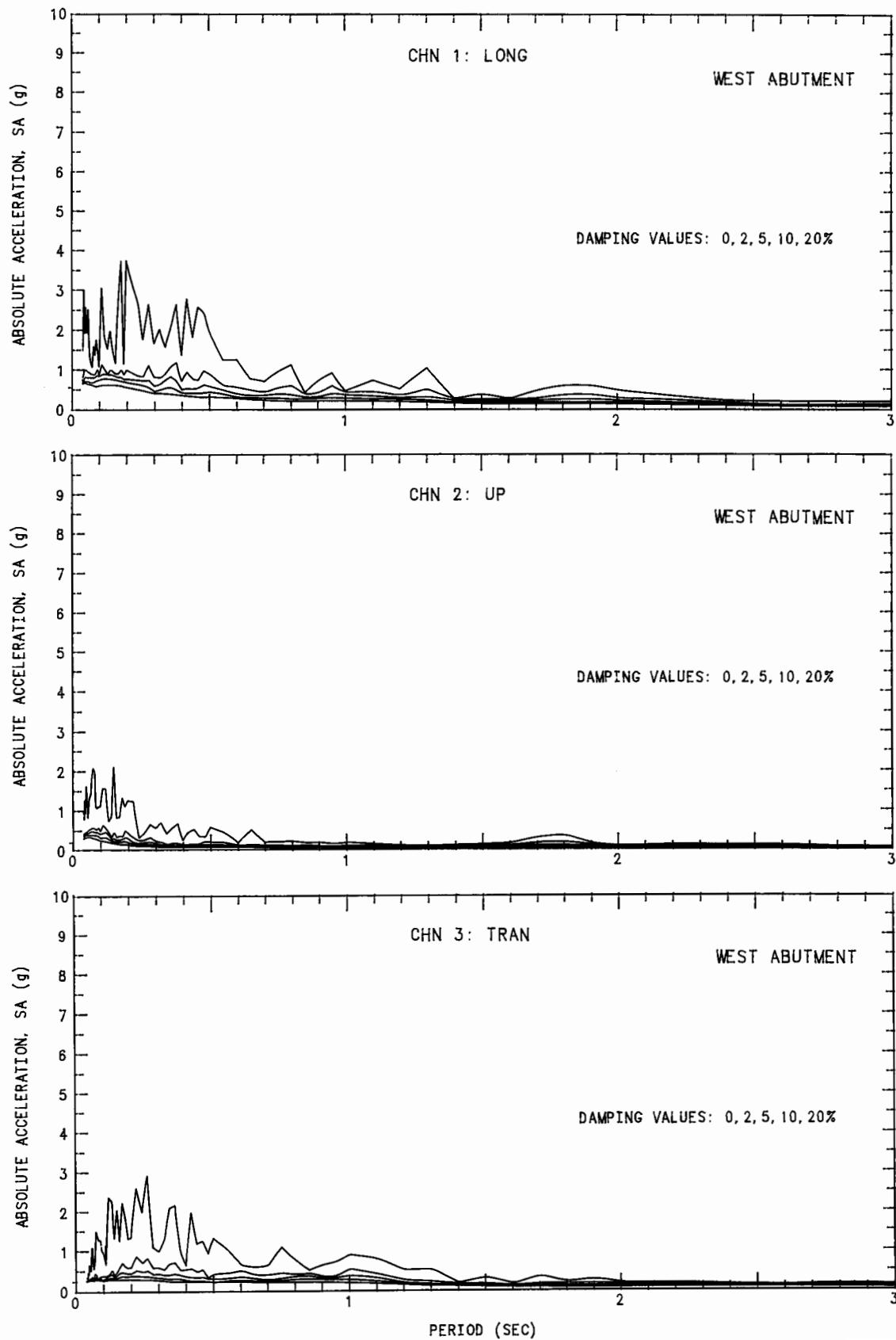
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 35): UP (NORTH ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0783-92180.04 100693.1432-COLTON.V3



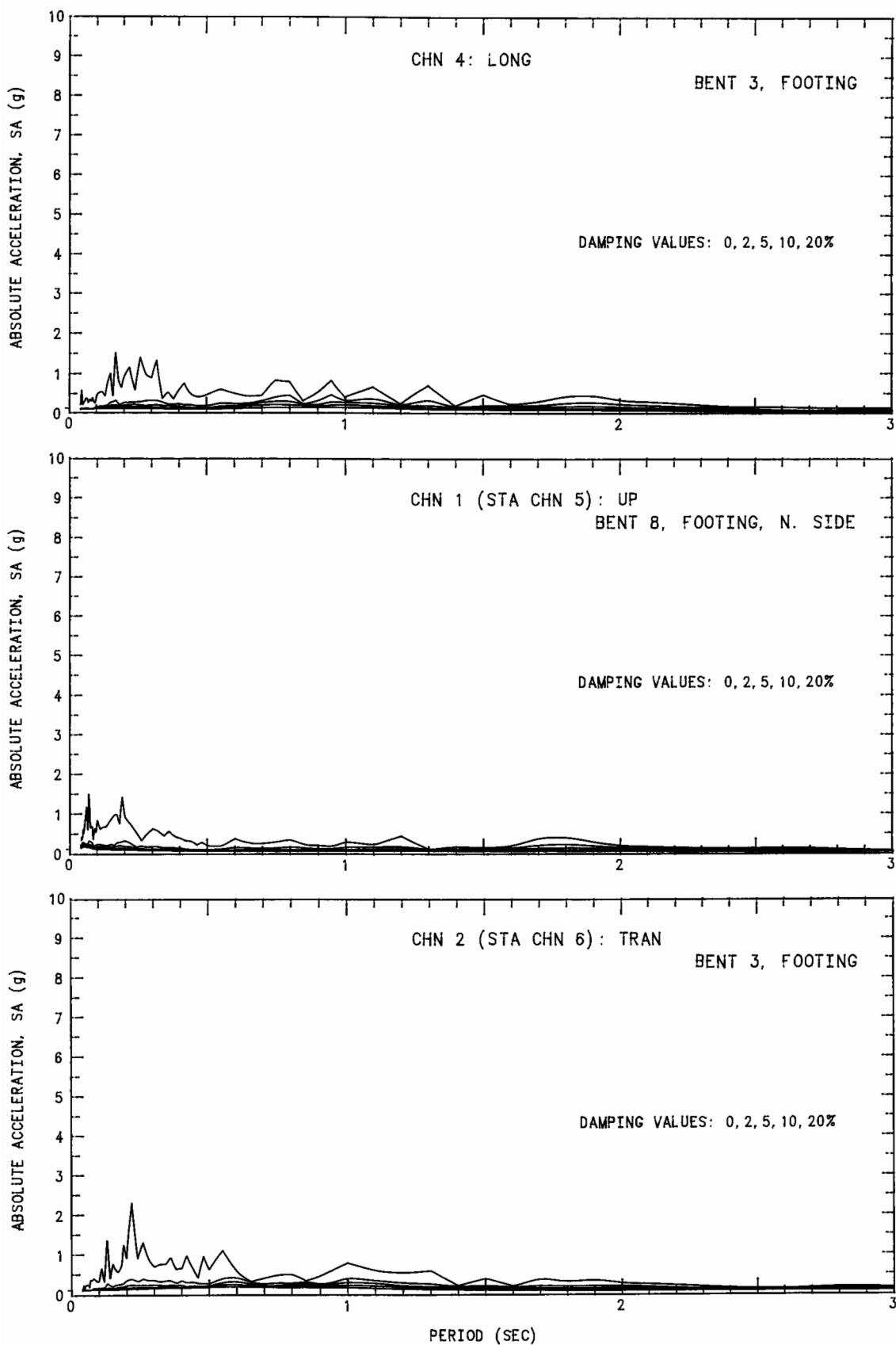
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 36): TRAN (NORTH ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-E0783-92180.04 100693.1432-COLTON.V3



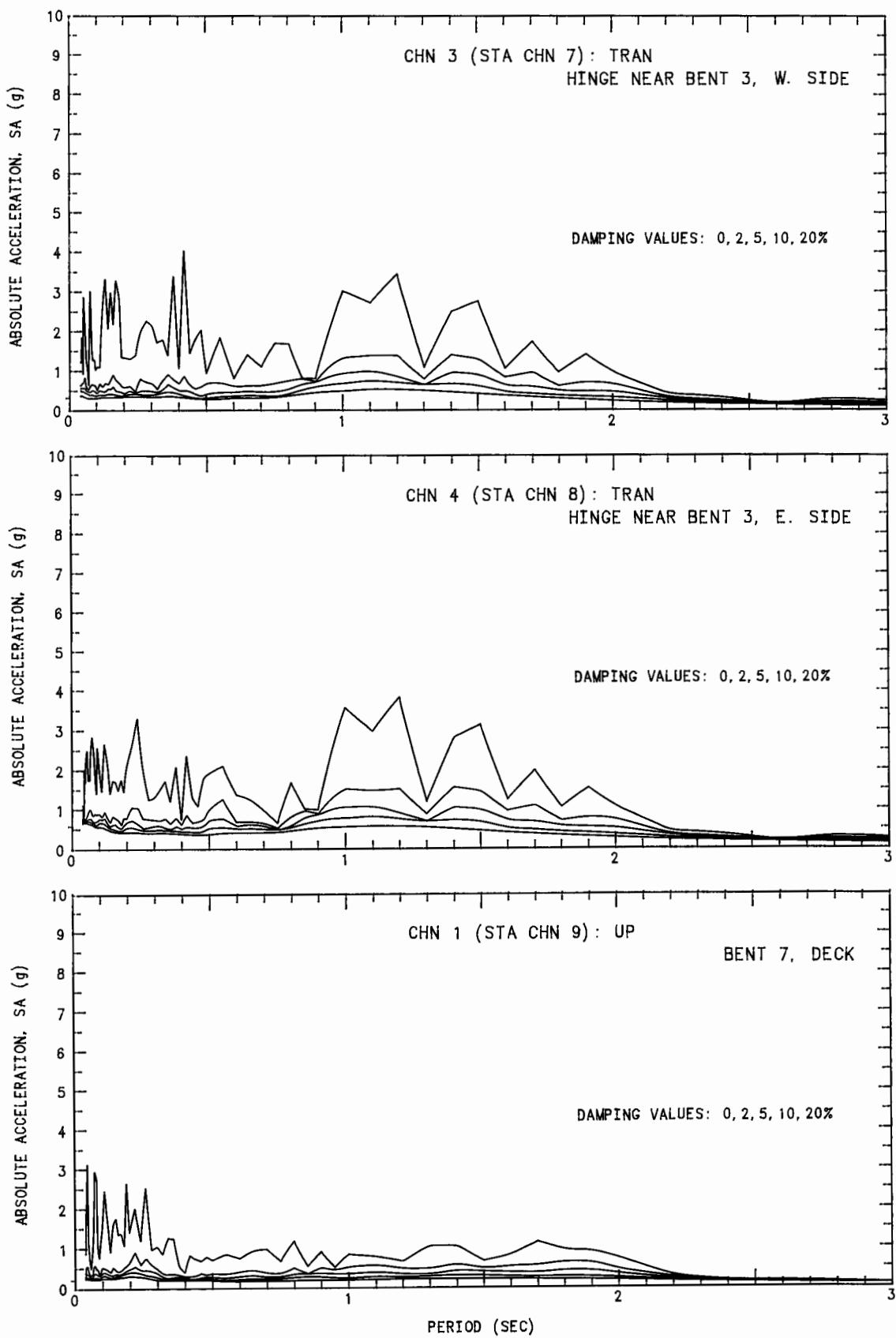
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0775-92180.04 091793.1306-QL92A631



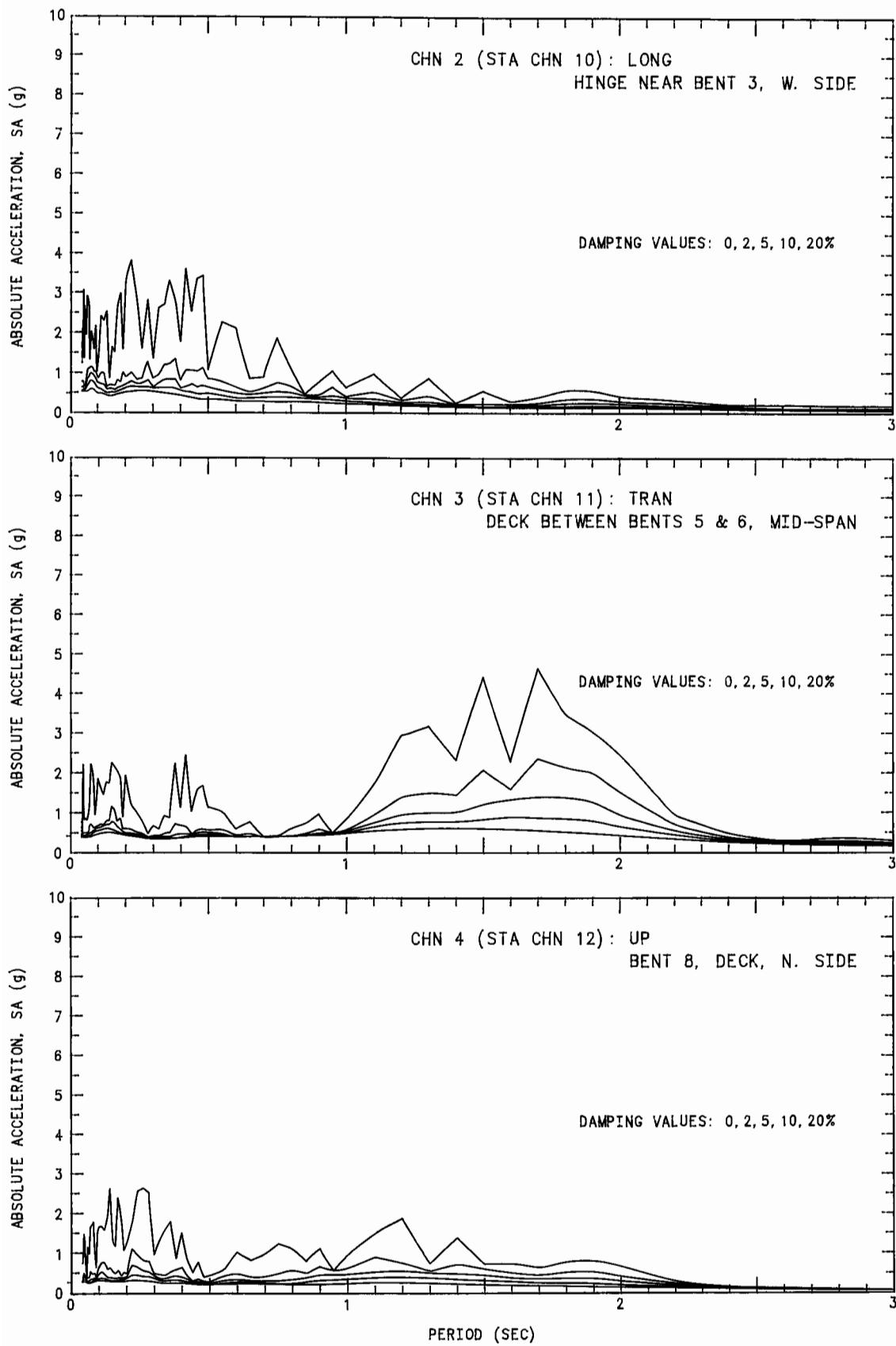
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10--.20 TO 46.0-50.0 HZ.  
23631-E0775-92180.04 091793.1306-QL92A631



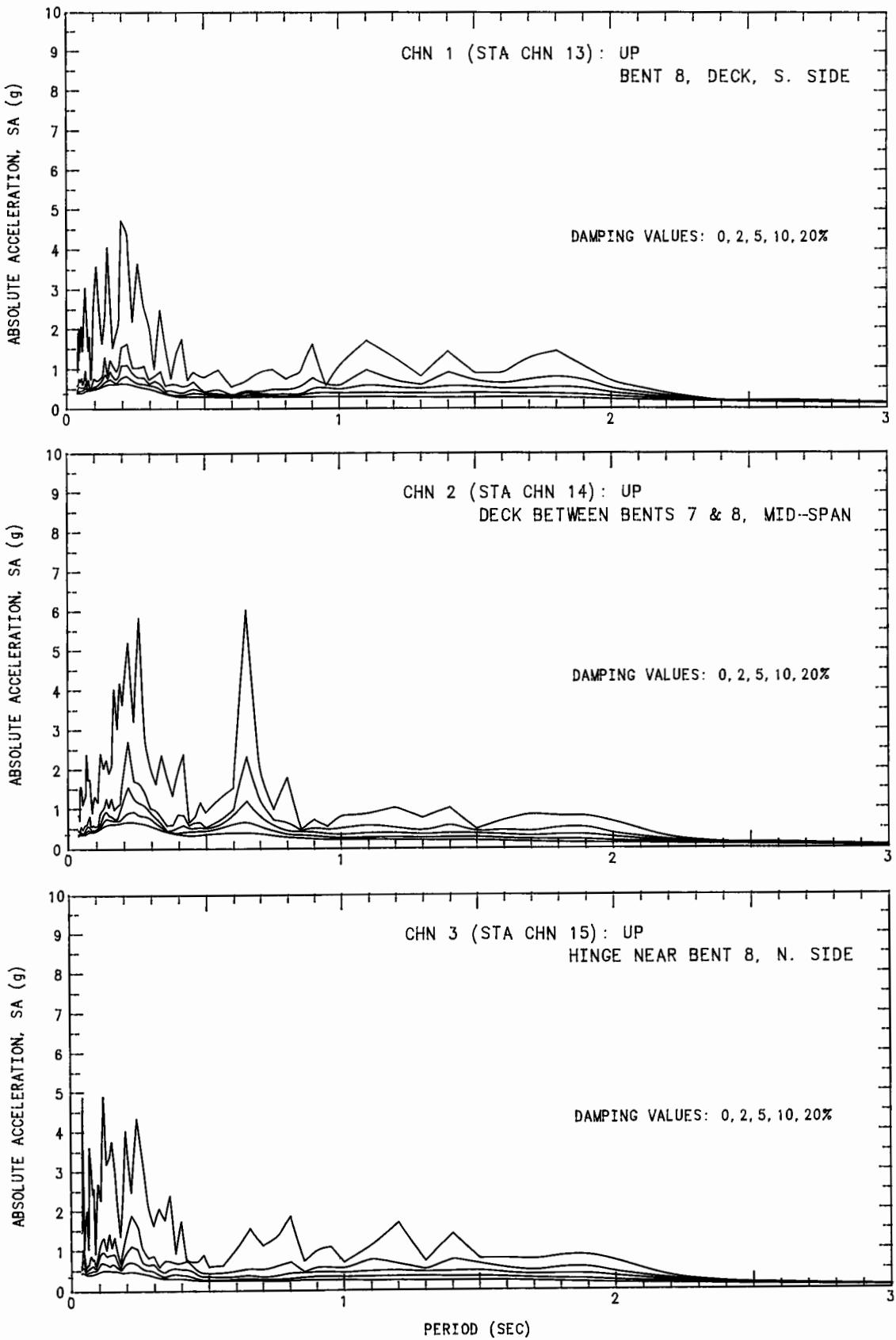
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23631-E0776-92180.04 091793.1306-QL92A631



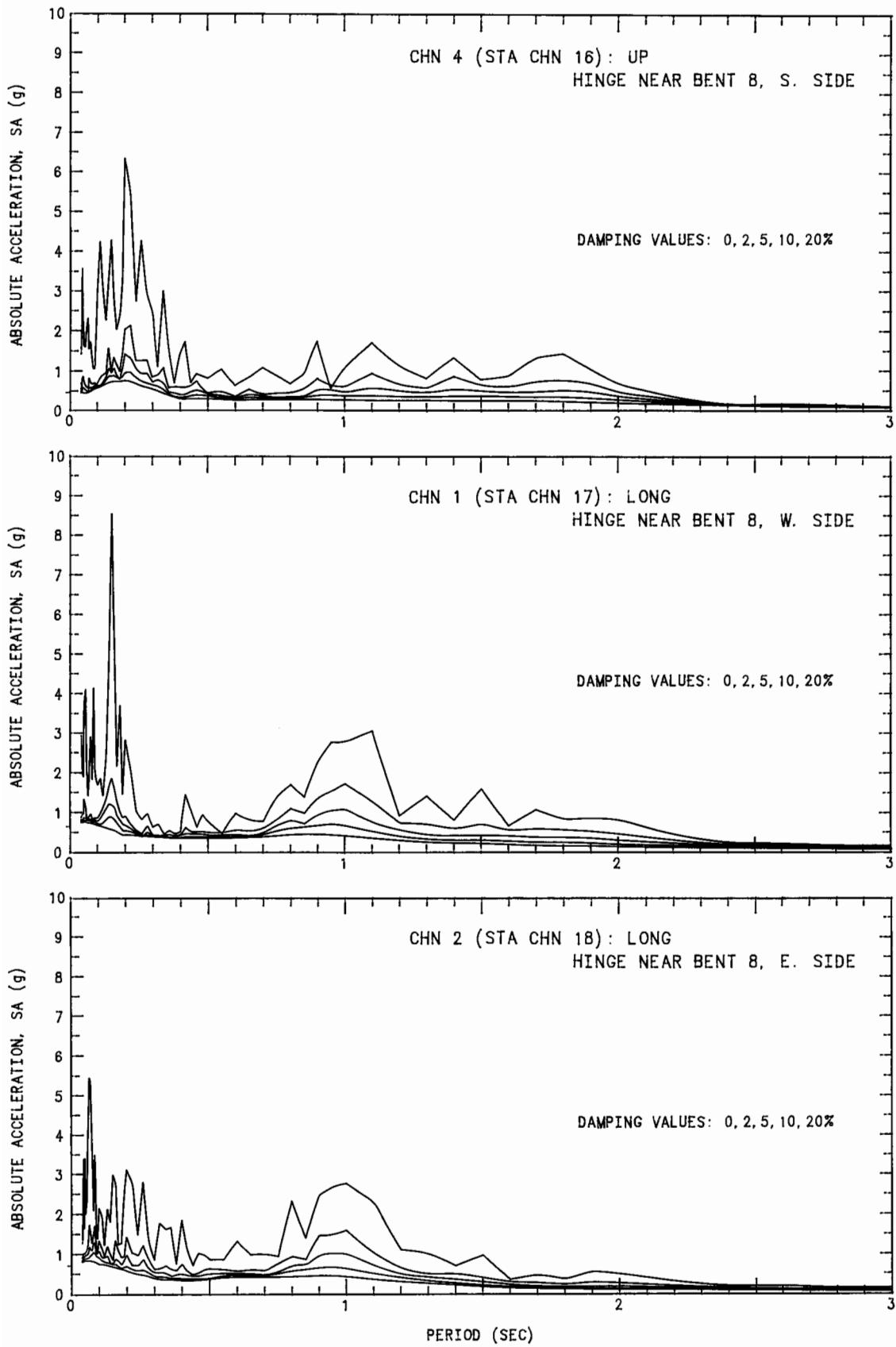
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0777-92180.04 091793.1306-QL92A631



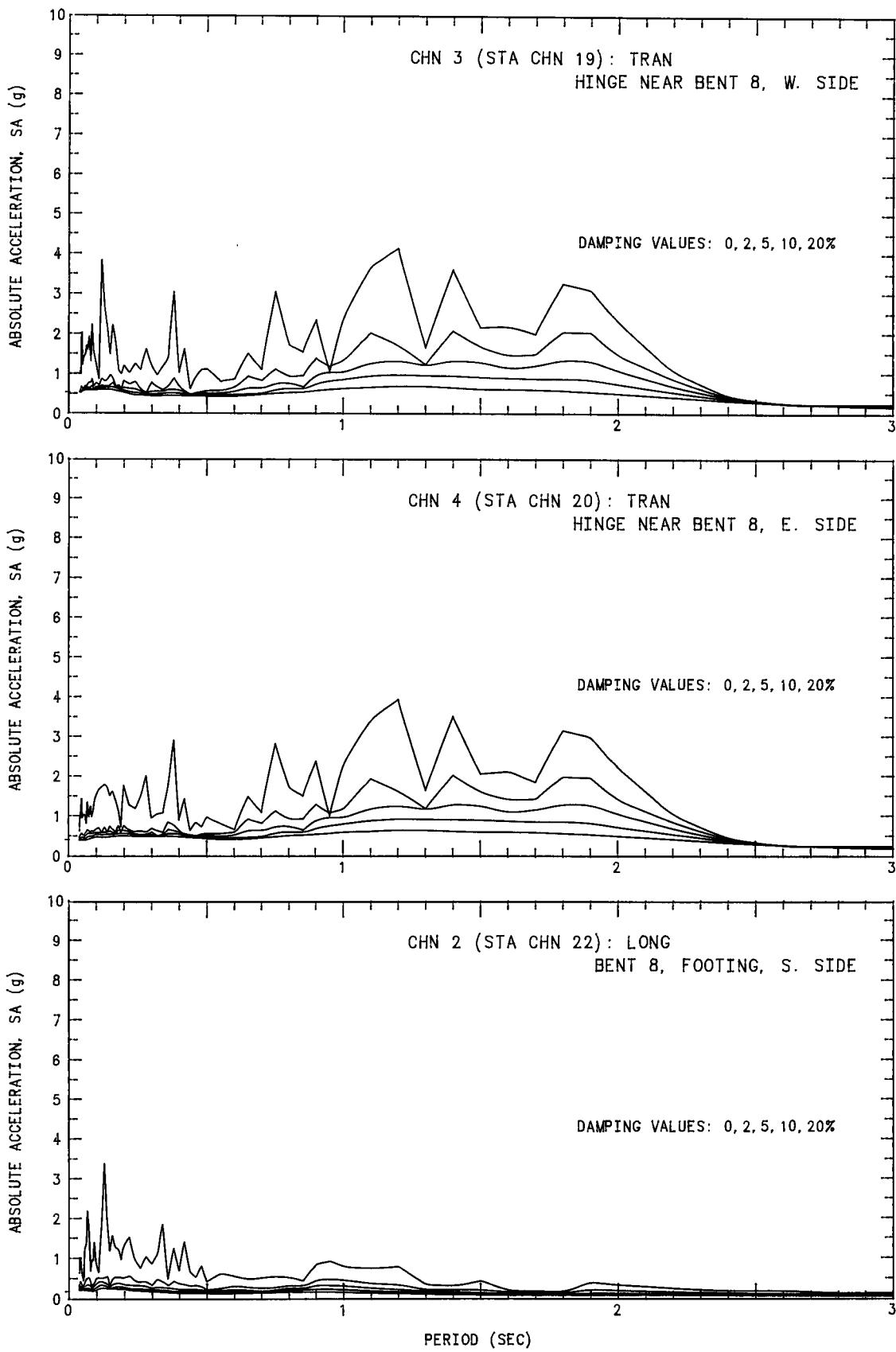
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23631-E0778-92180.04 091793.1306-QL92A631



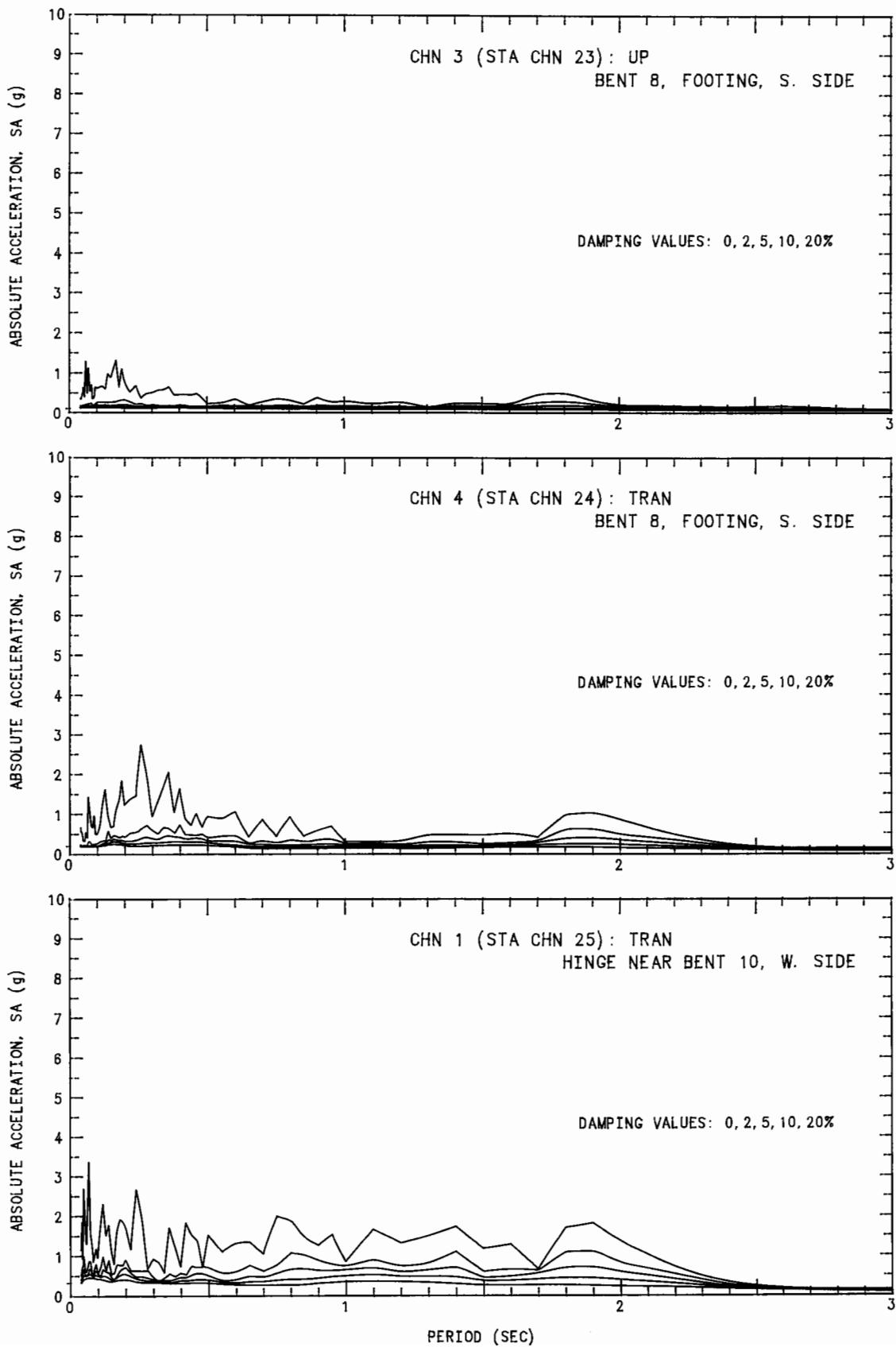
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0778-92180.04 091793.1306-QL92A631



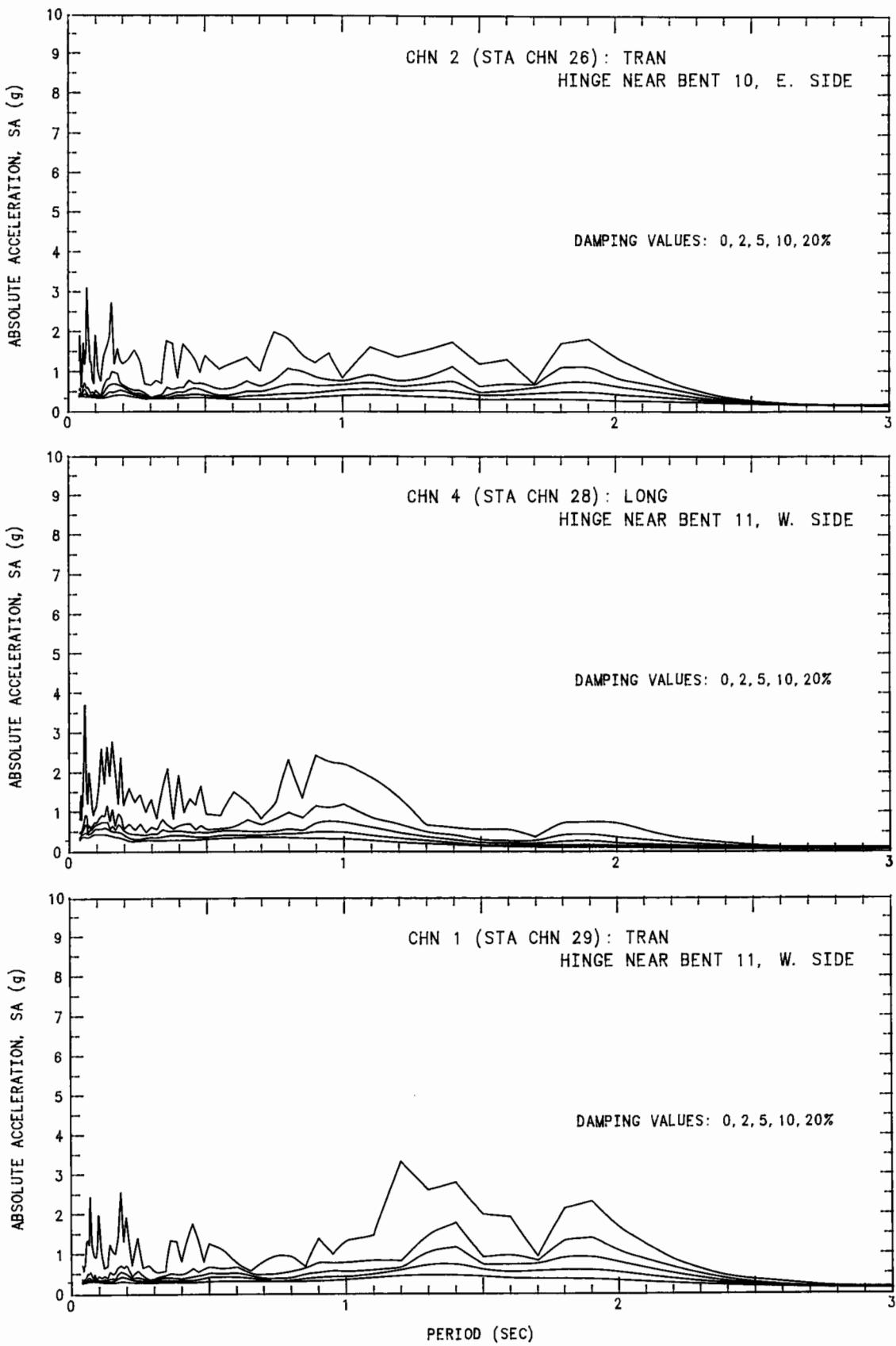
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0779-92180.04 091793.1306-QL92A631



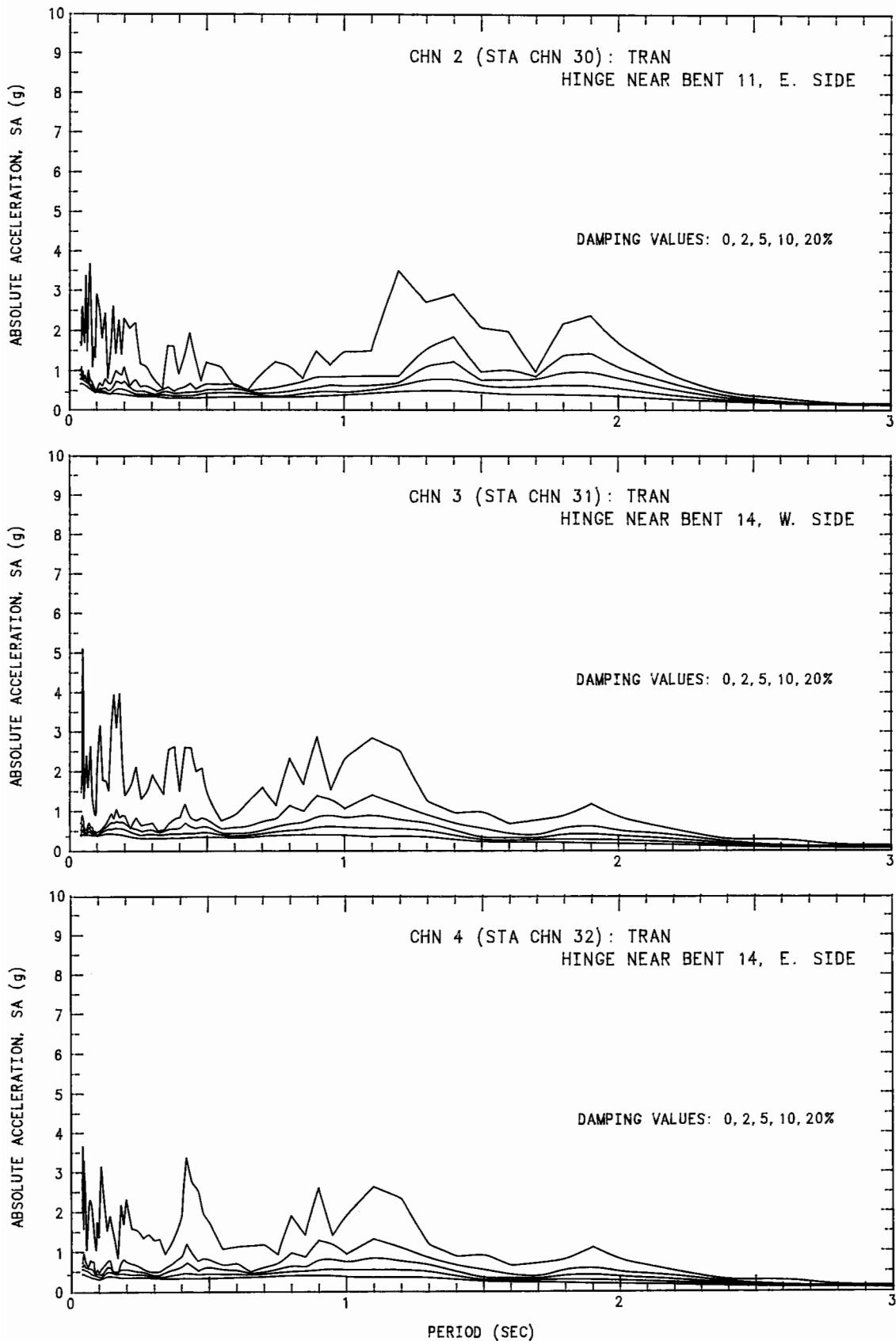
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0780-92180.04 091793.1306-QL92A631



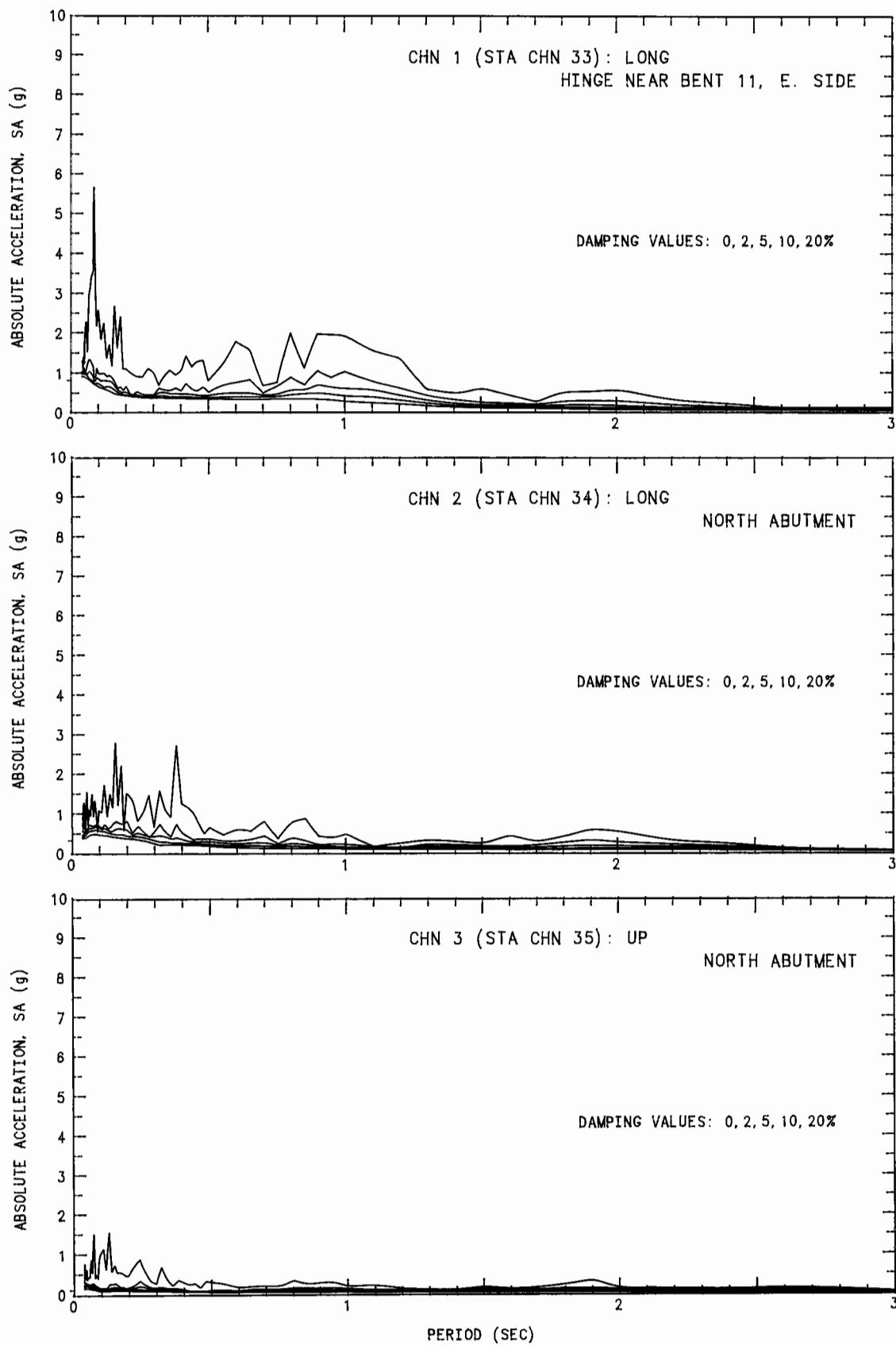
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0781-92180.04 091793.1306-QL92A631



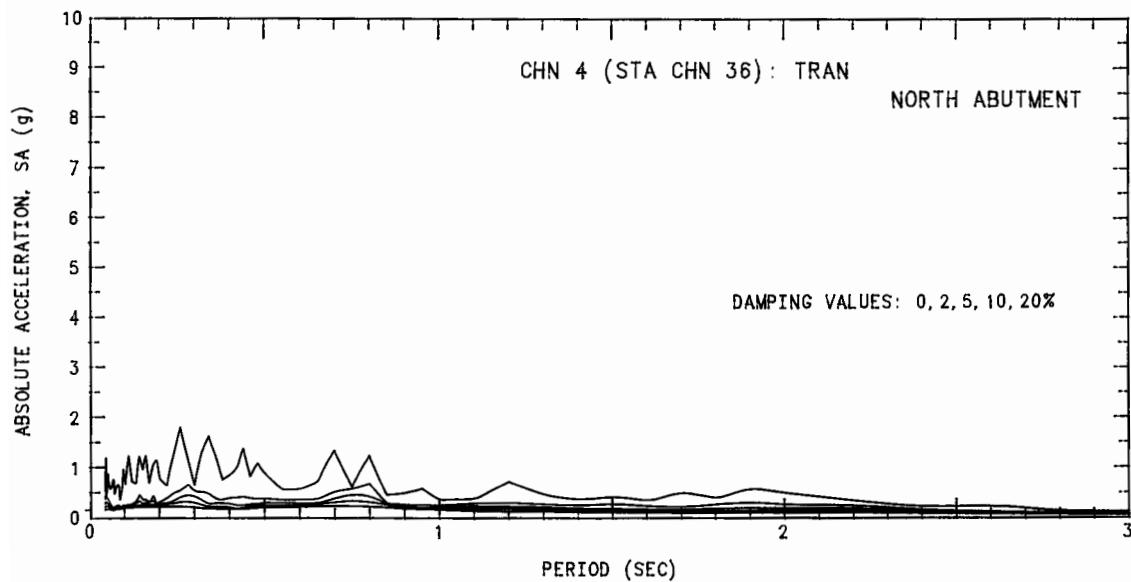
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0782-92180.04 091793.1306-QL92A631



LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0783-92180.04 091793.1306-QL92A631



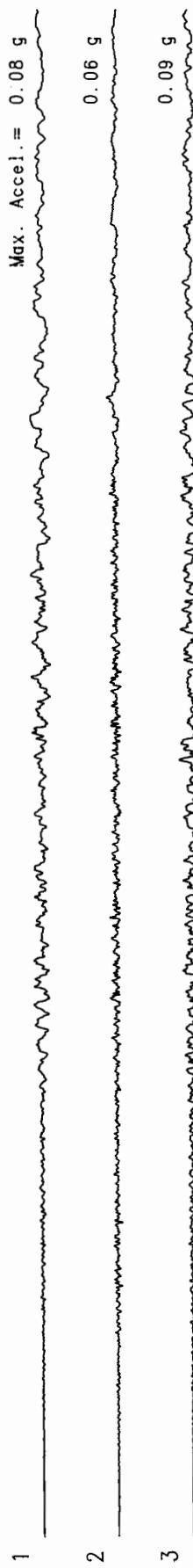
LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0783-92180.04 091793.1306-QL92A631





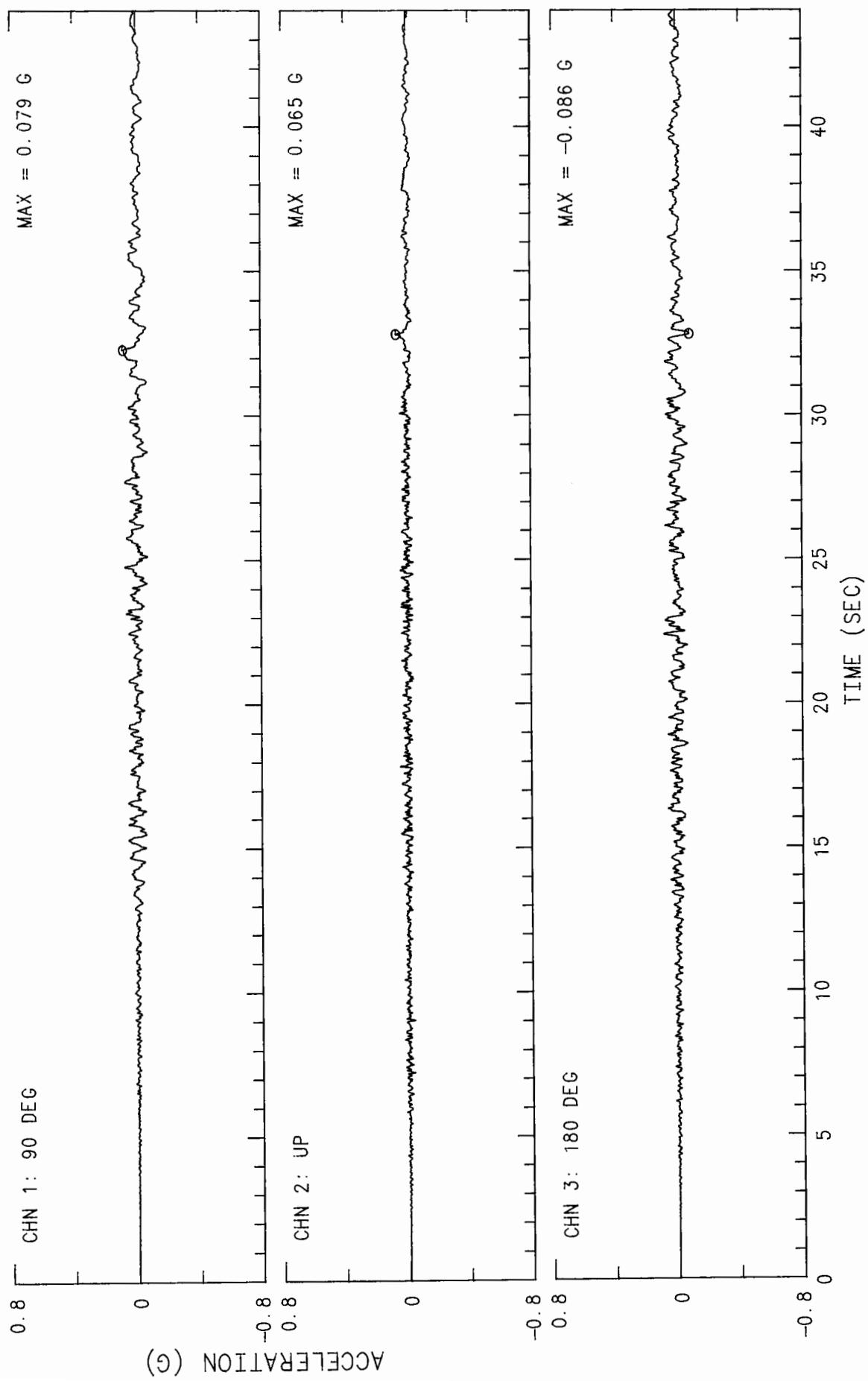
San Bernardino - E & Hospitality  
(CSMIP Station 23542)

RECORD 23542-E0557-92181.03

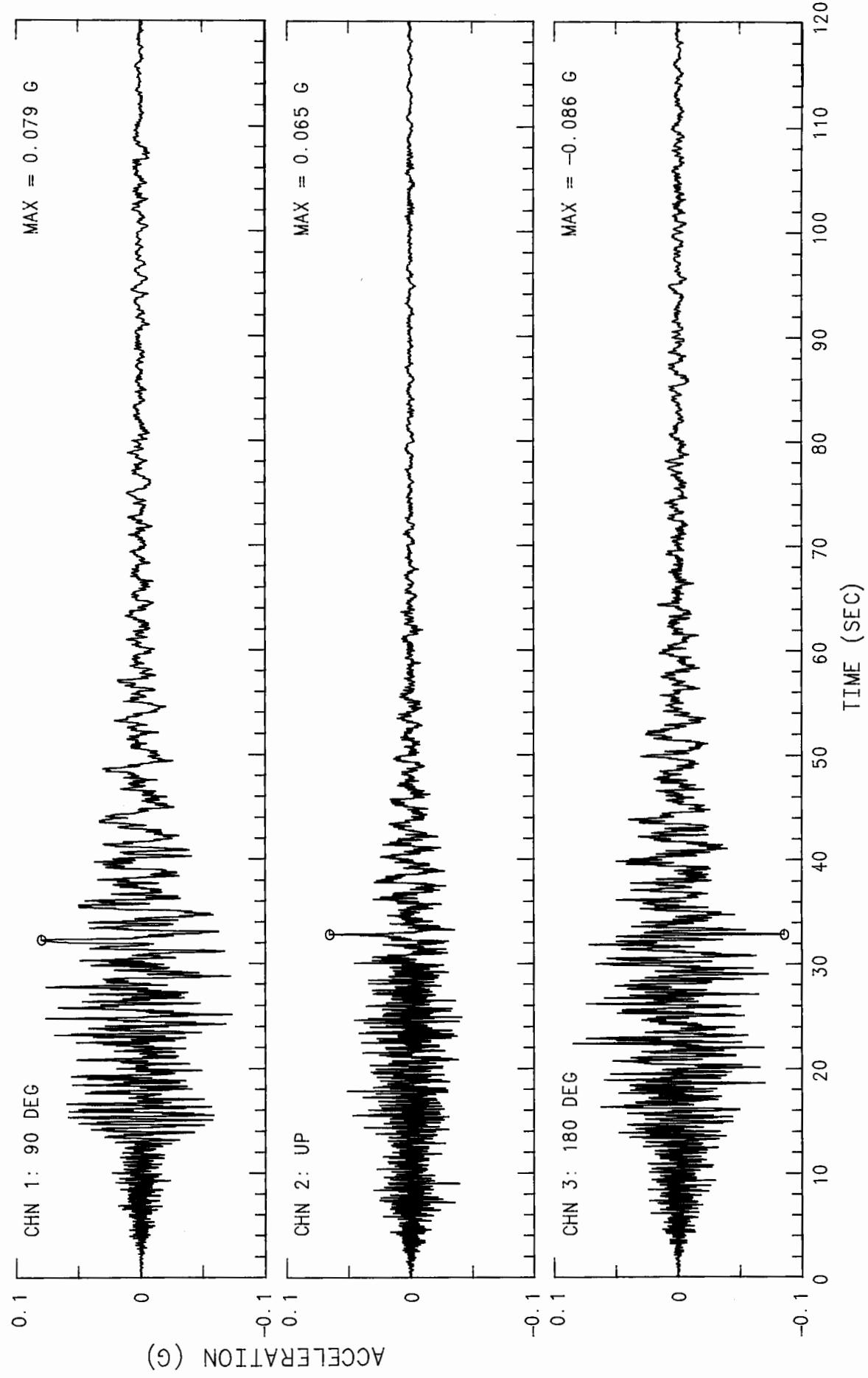


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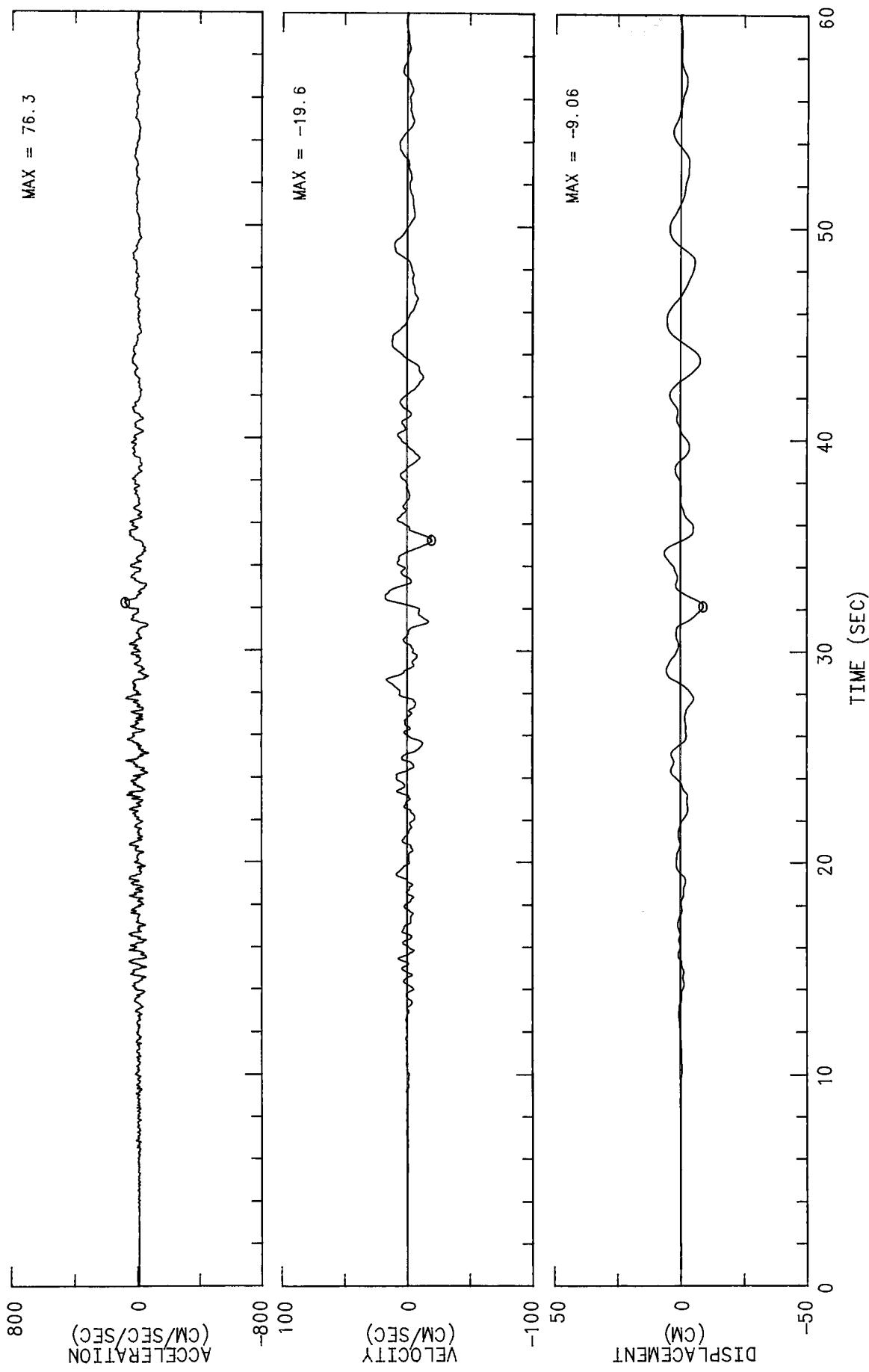
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UNCORRECTED ACCELERограм 23542-E0557-92181.03 102093.1345-QL92A542



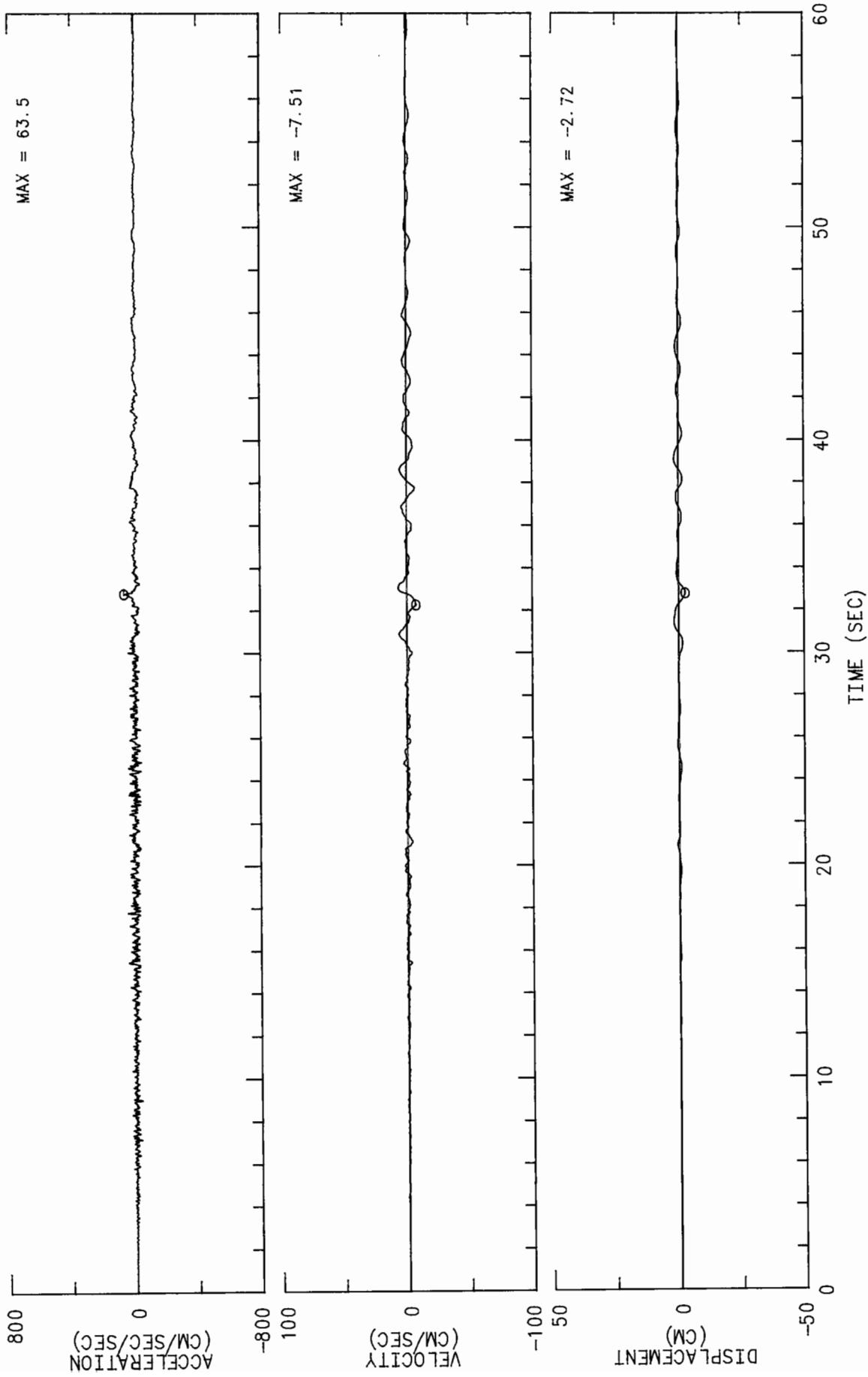
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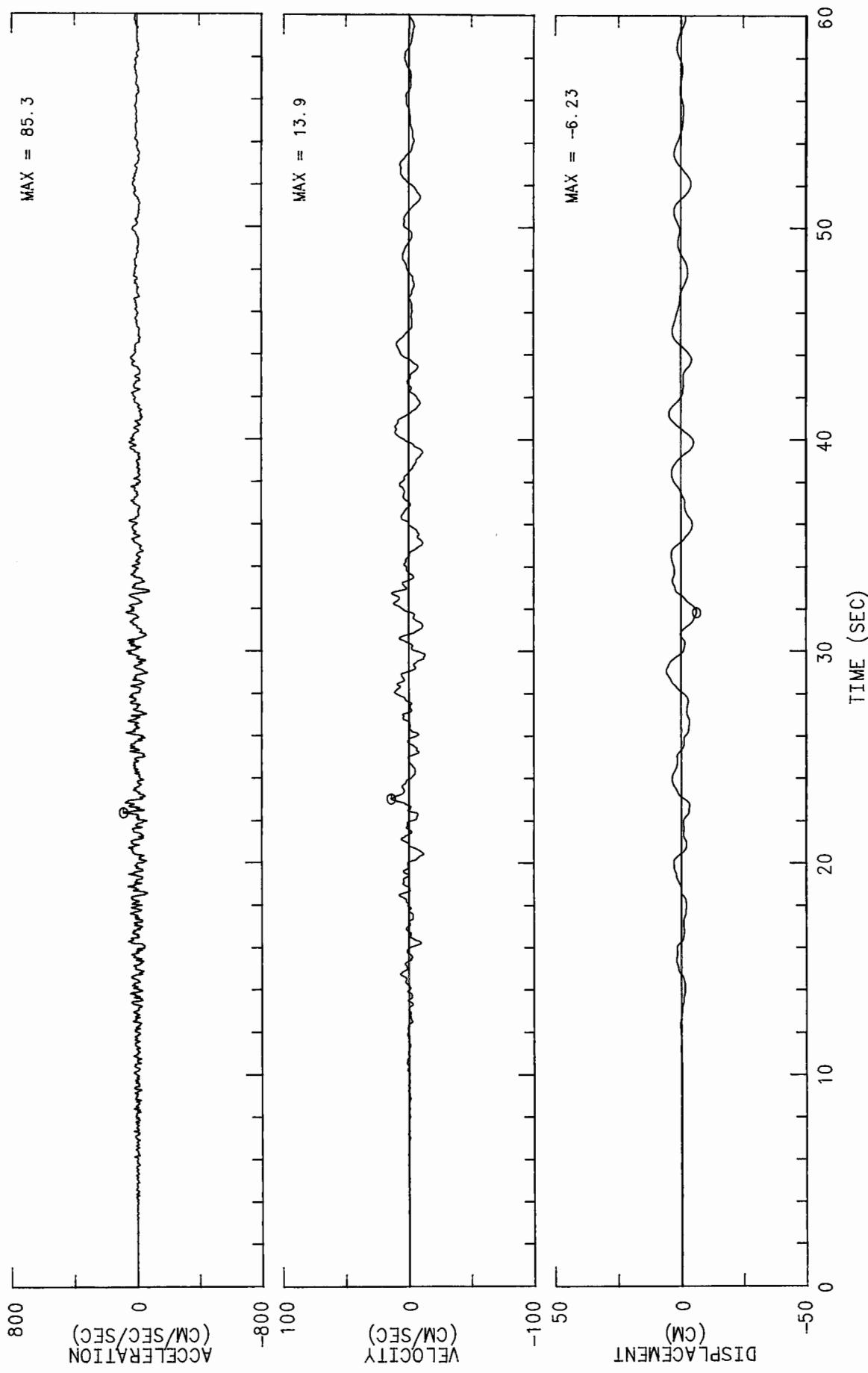
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FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23542-E0557-92181.03 102093.1539-QL92A542



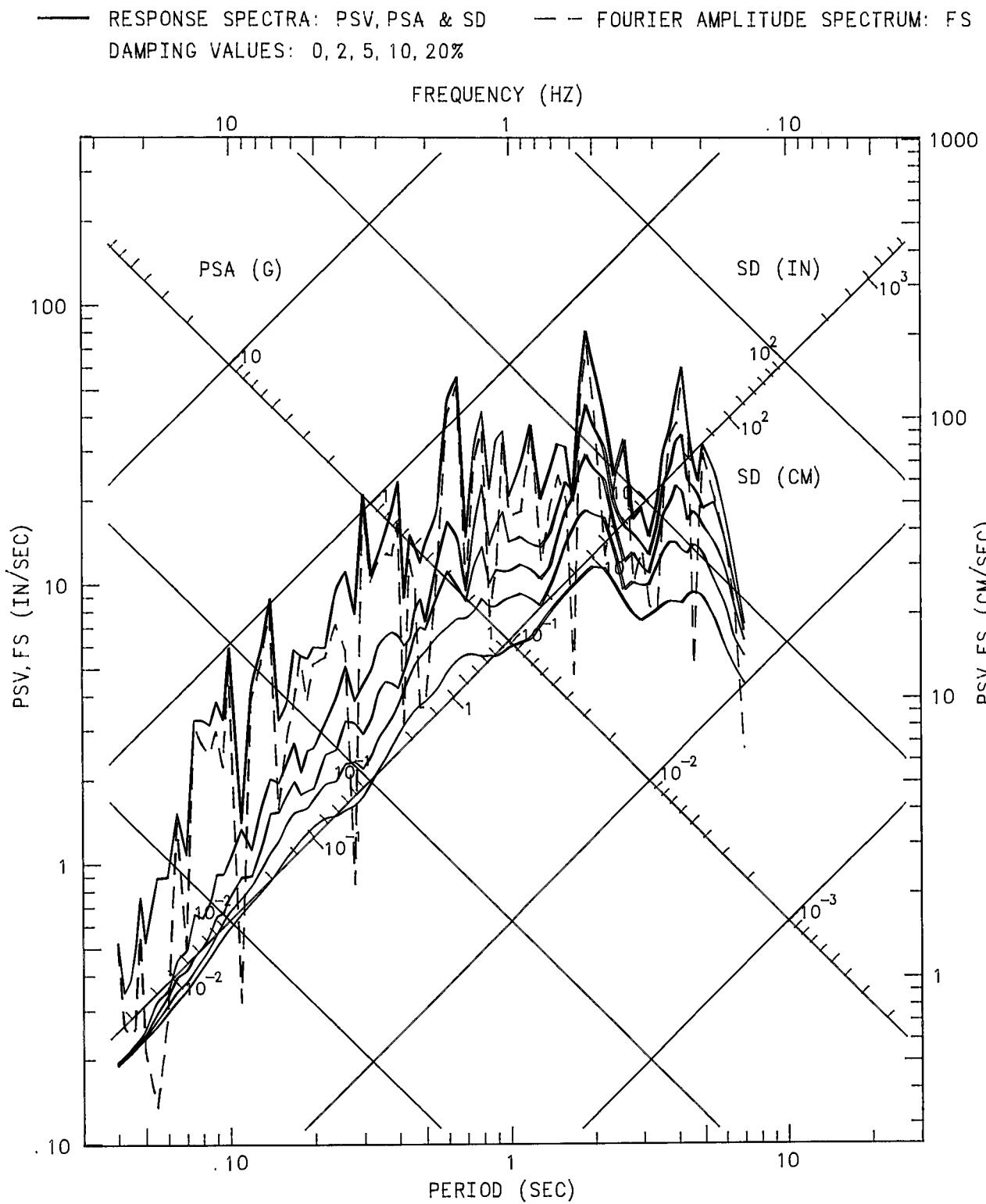
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SAN BERNARDINO - E & HOSPITALITY CHN 2: UP  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23542-E0557-92181.03 102093.1539-QL92A542



LANDERS EARTHQUAKE JUNE 28, 1992 04:58 PDT  
 SAN BERNARDINO - E & HOSPITALITY CHN 3: 180 DEG  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 Hz. 23542-E0557-92181.03 102093.1539-QL92A542

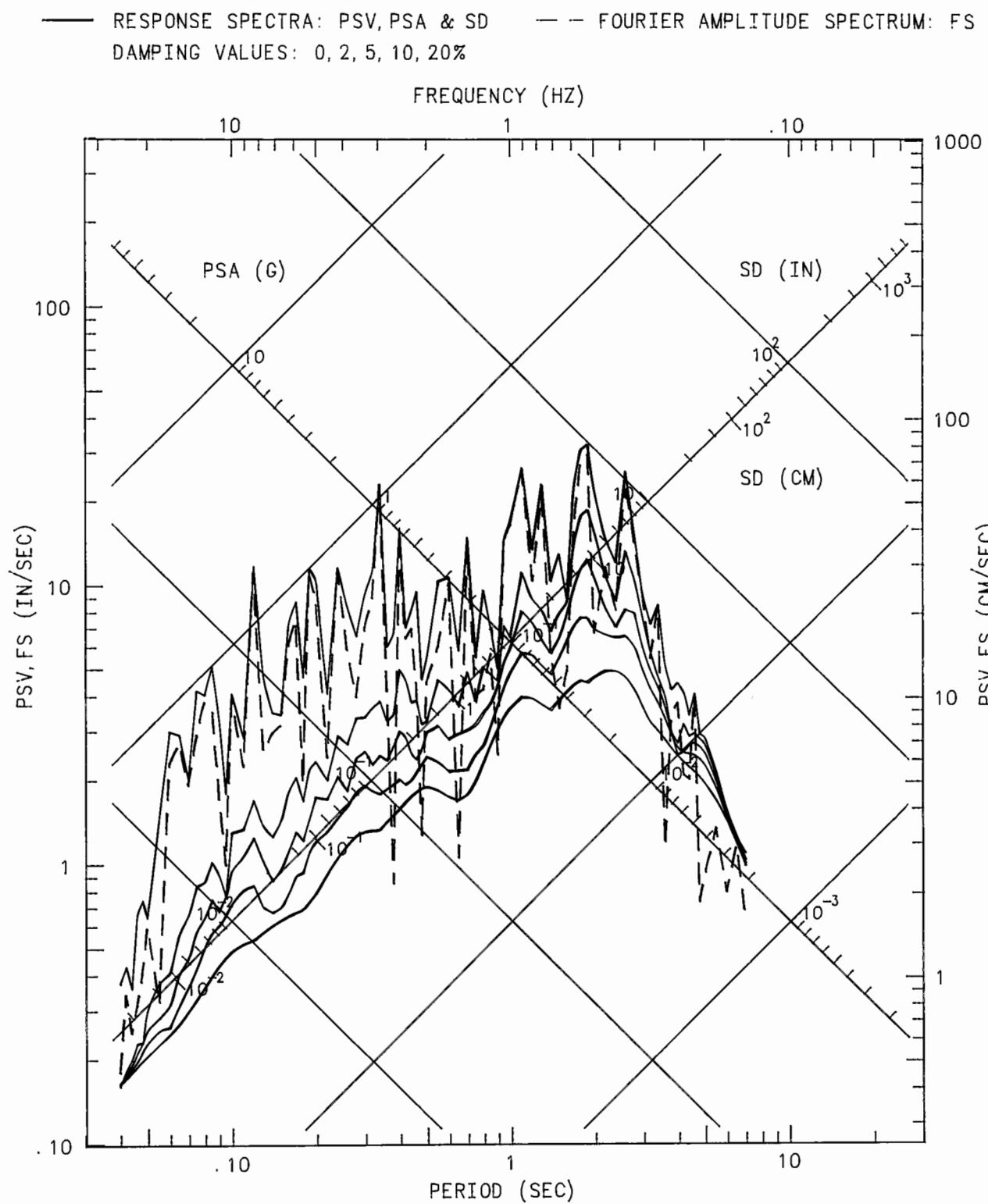


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CHN 1: 90 DEG  
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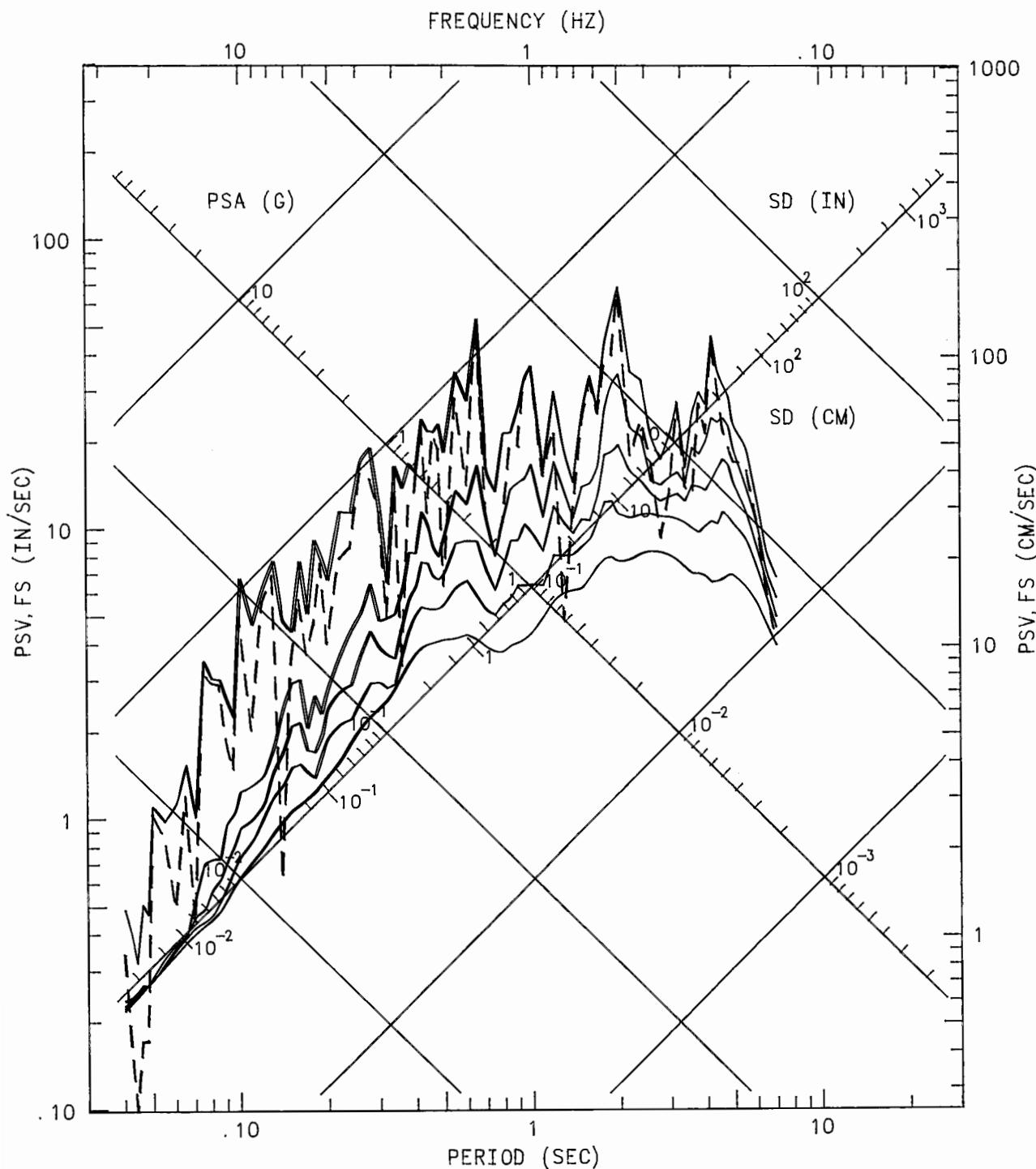
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 CHN 2: UP

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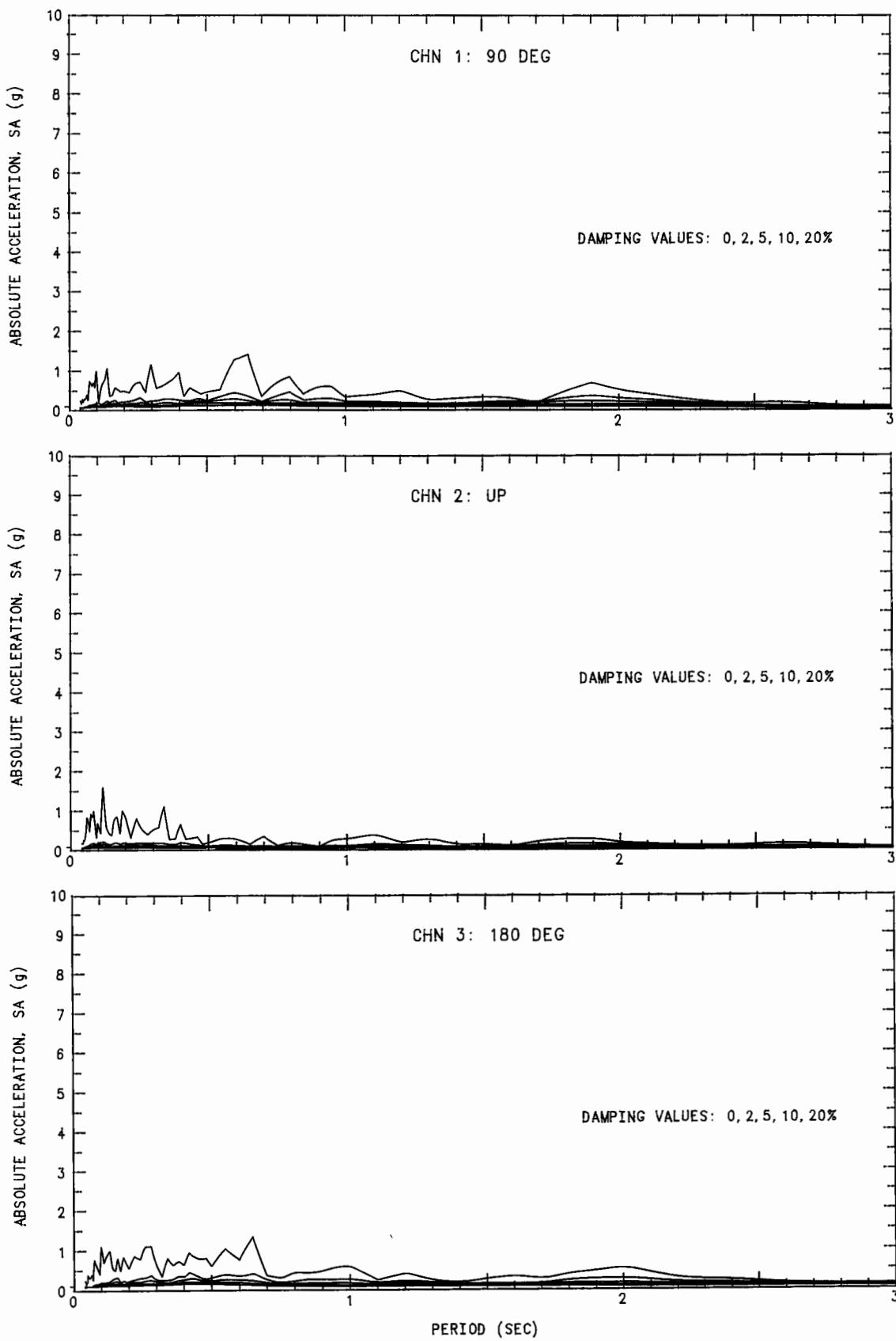


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CHN 3: 180 DEG  
ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23542-E0557-92181.03 102093.1613-QL92A542

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
DAMPING VALUES: 0, 2, 5, 10, 20%

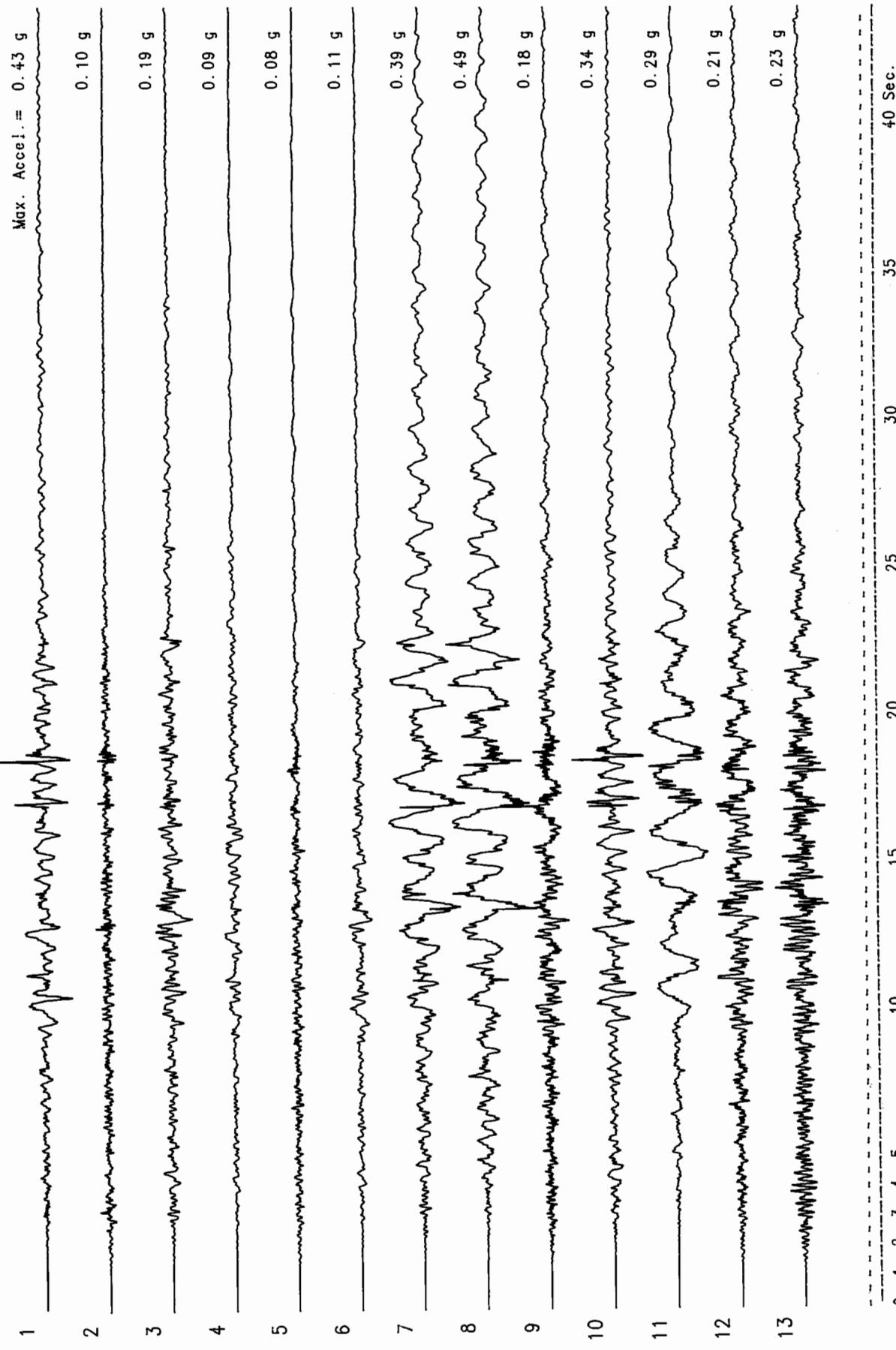


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ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
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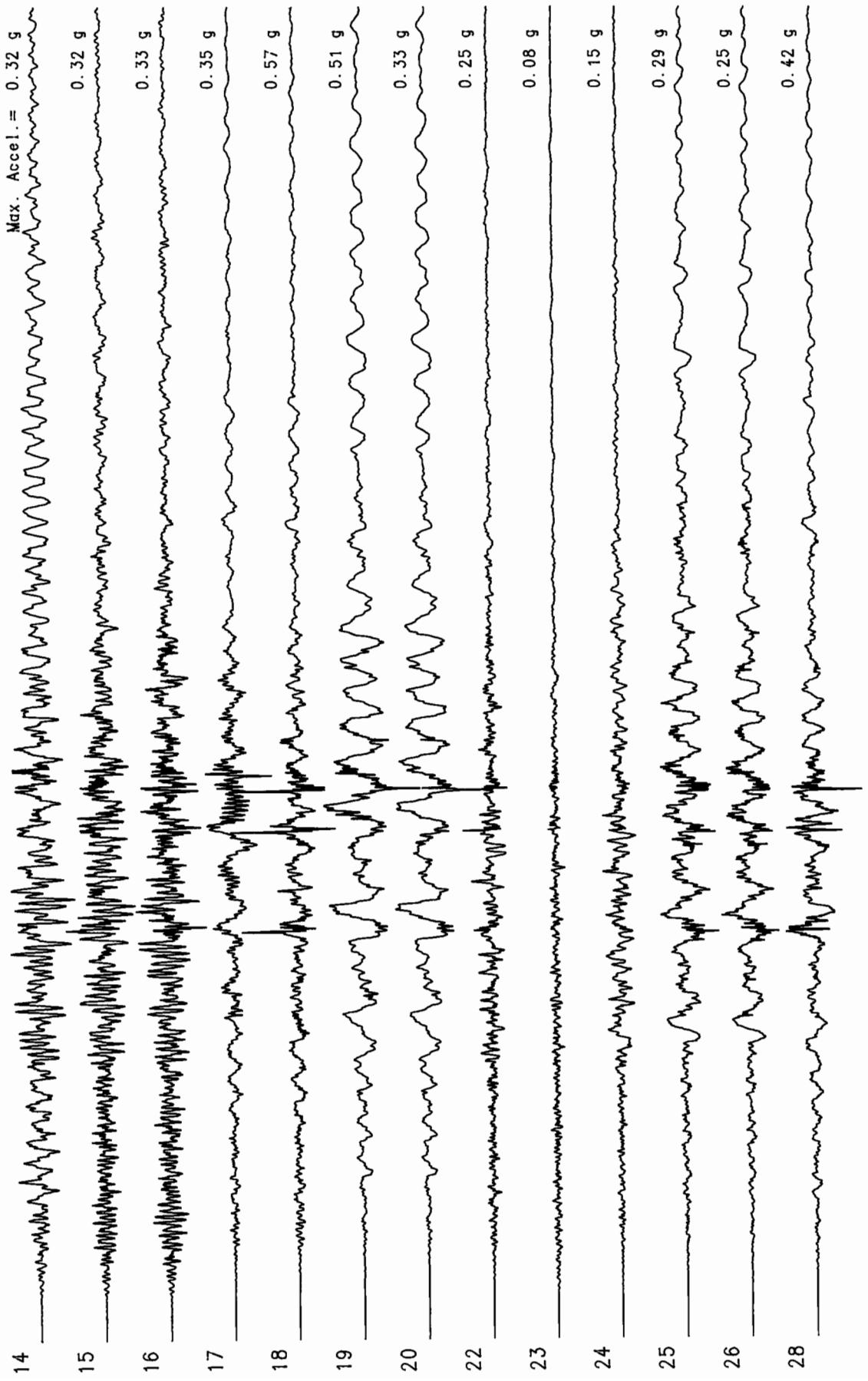
SAN BERNARDINO - I 10/215 INTERCHANGE  
(CSMIP Station 23631)

RECORD 23631-CS117-92180.09



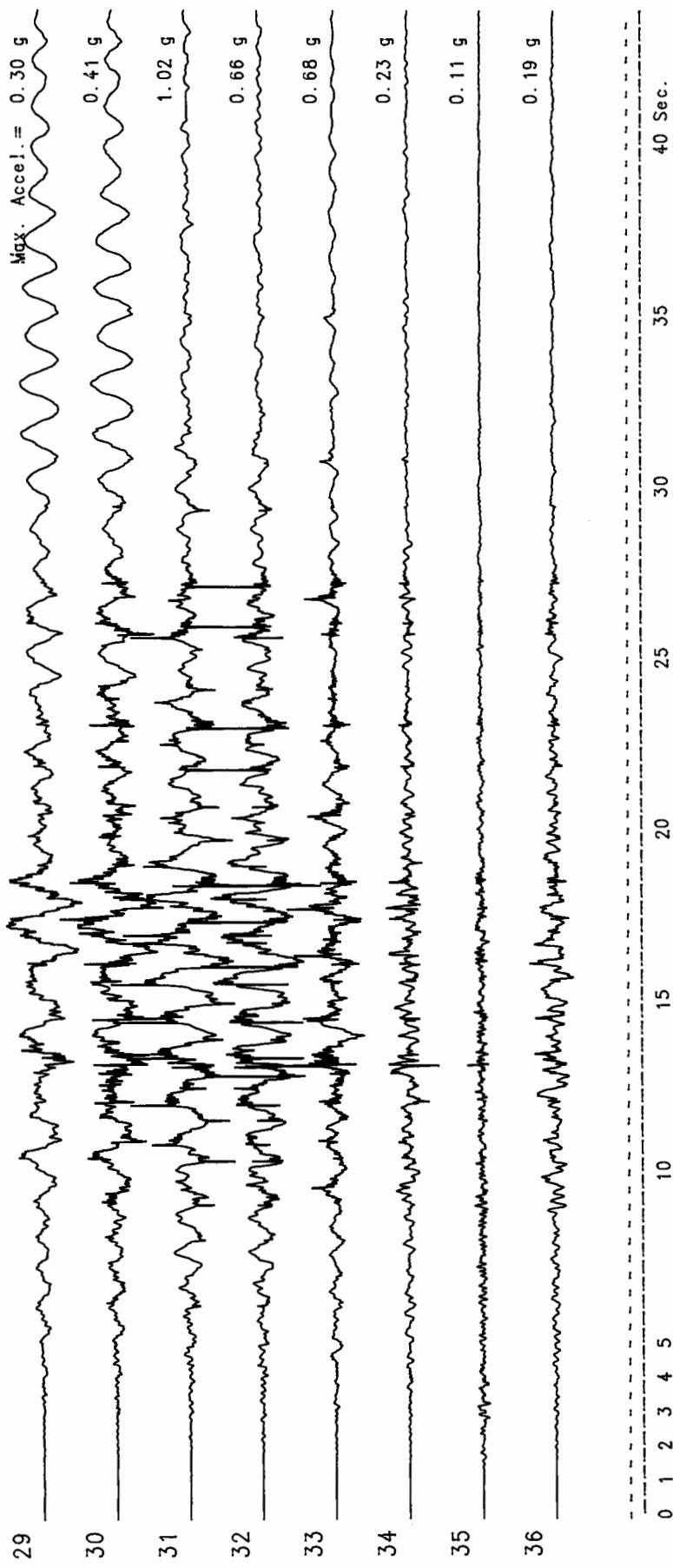
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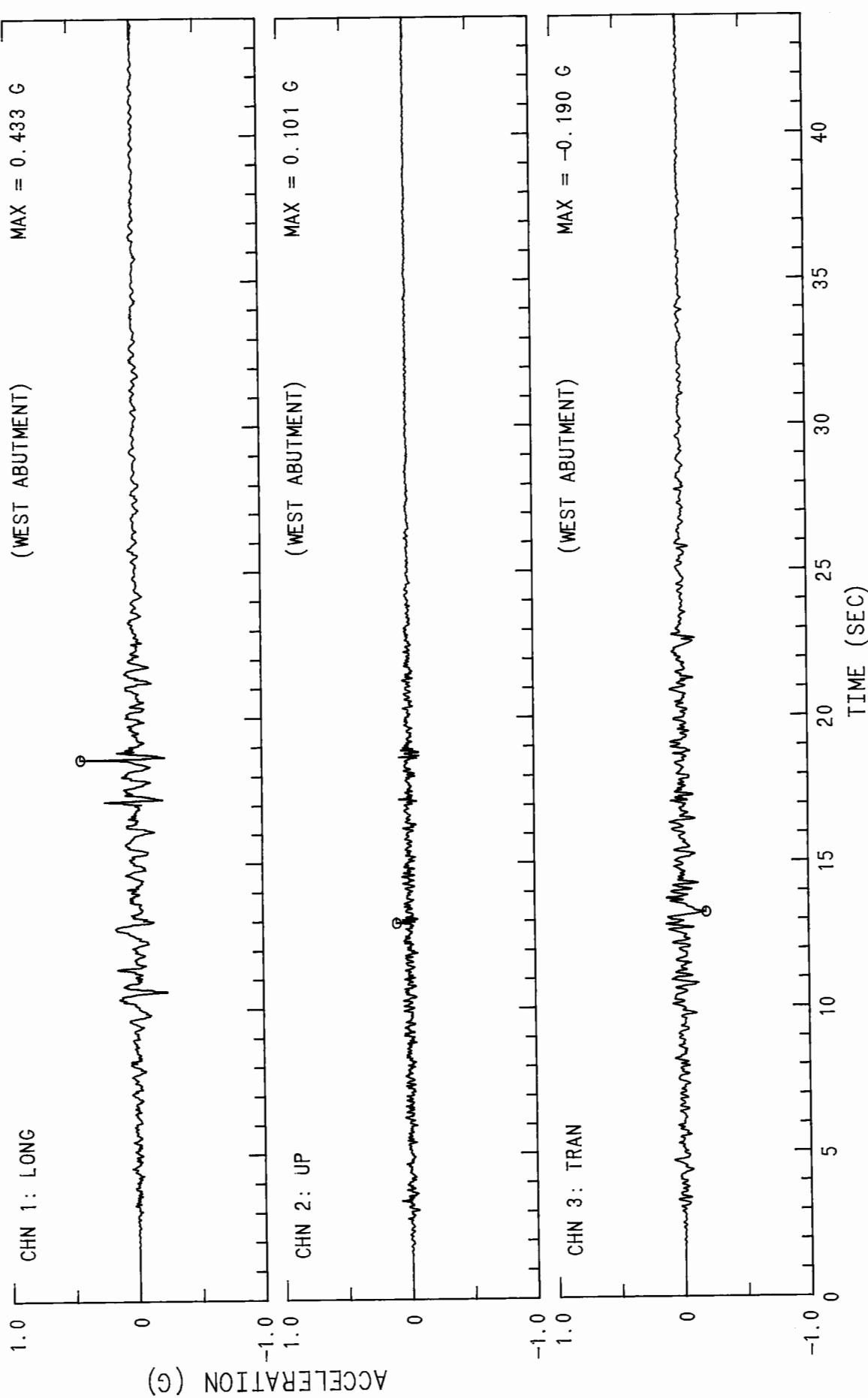


SAN BERNARDINO - I 10/215 INTERCHANGE  
(CSMIP Station 23631)

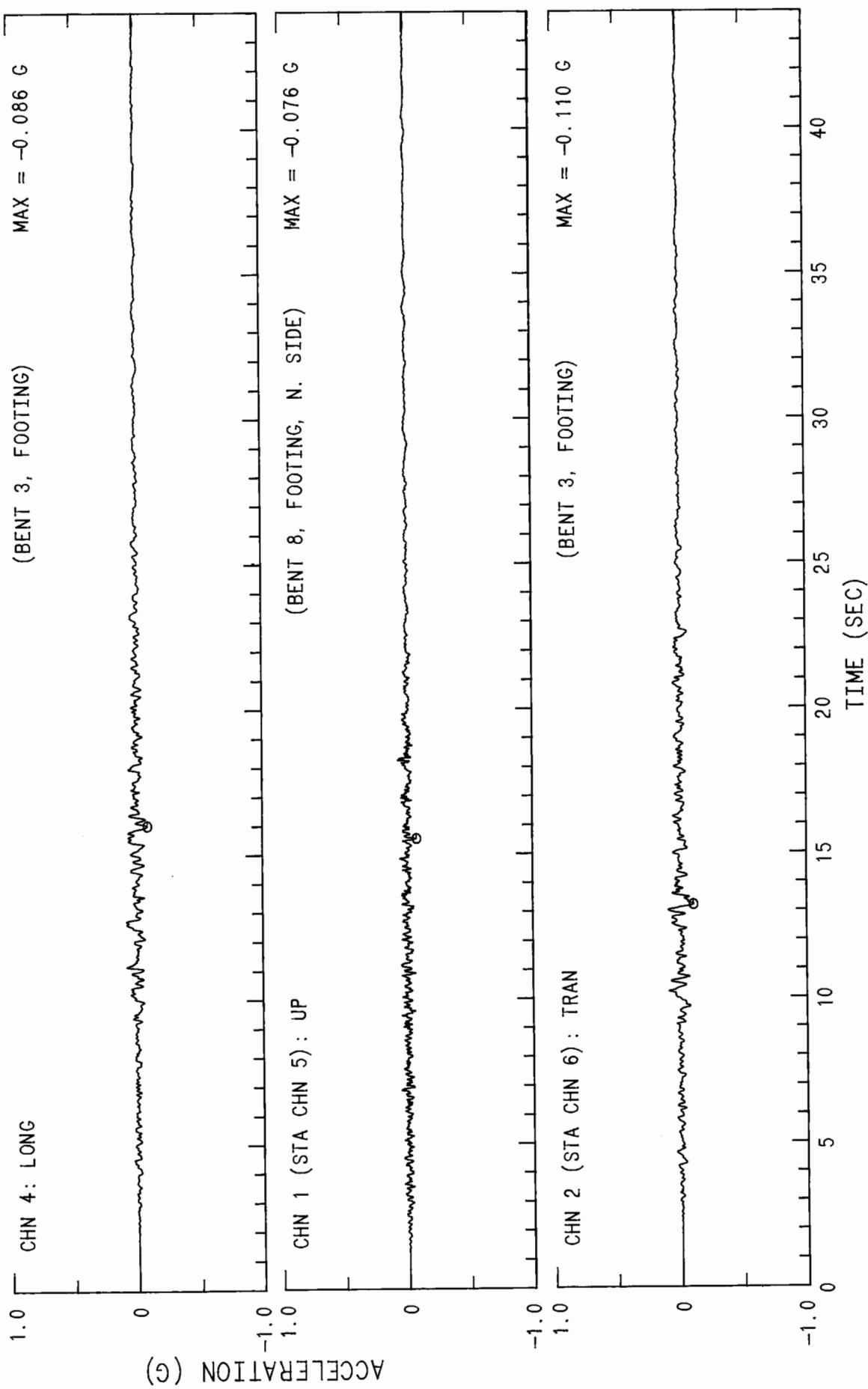
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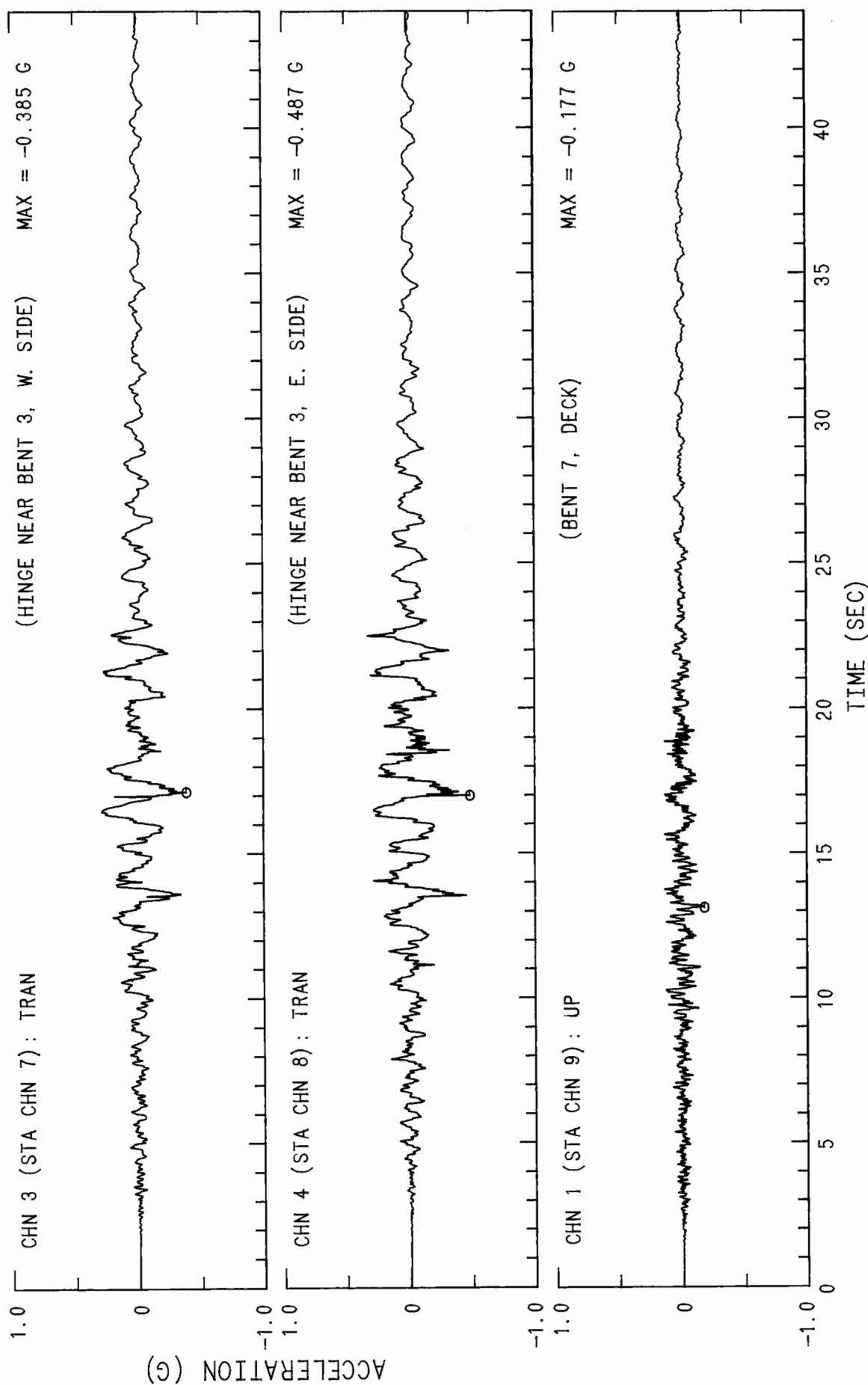
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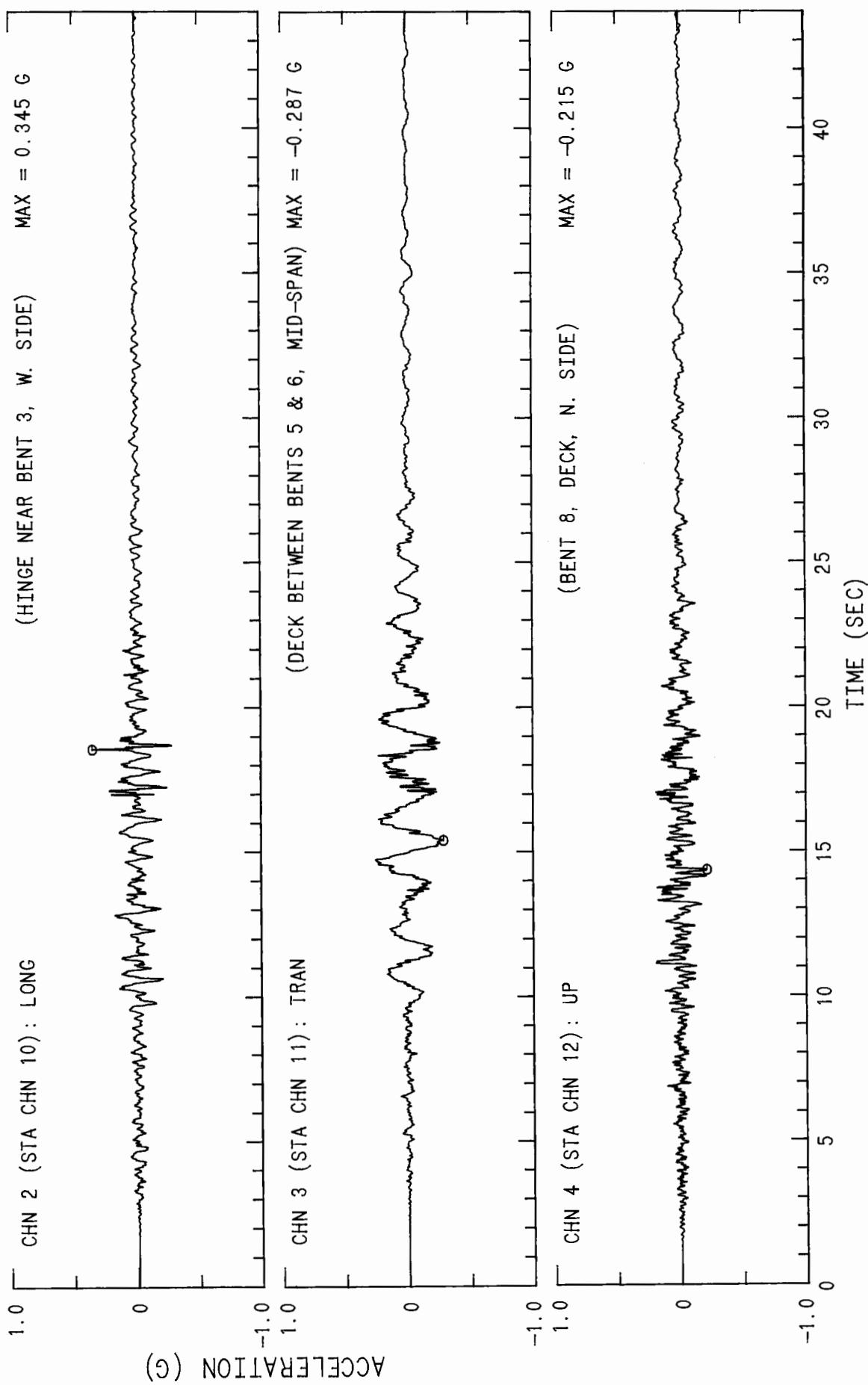
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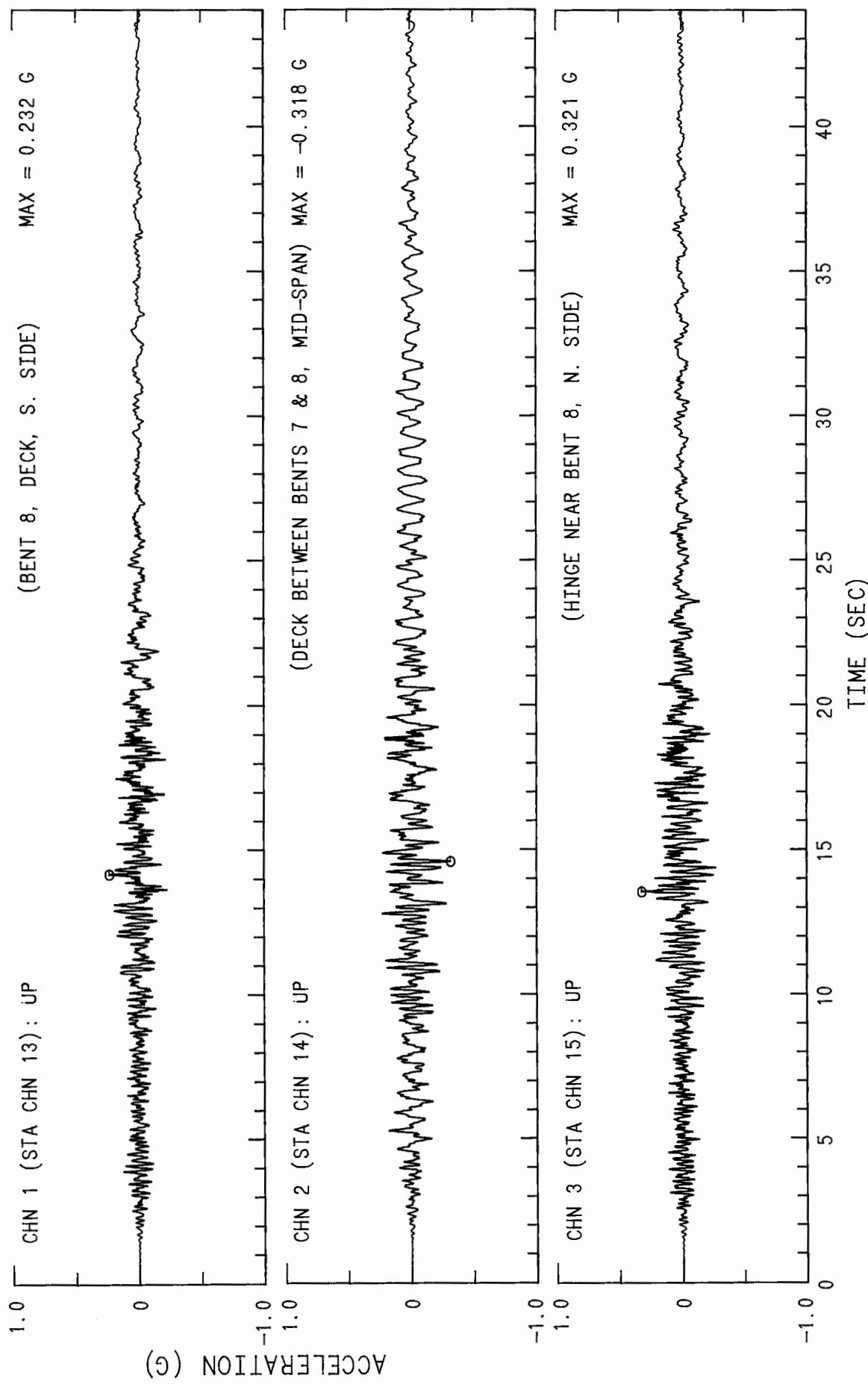
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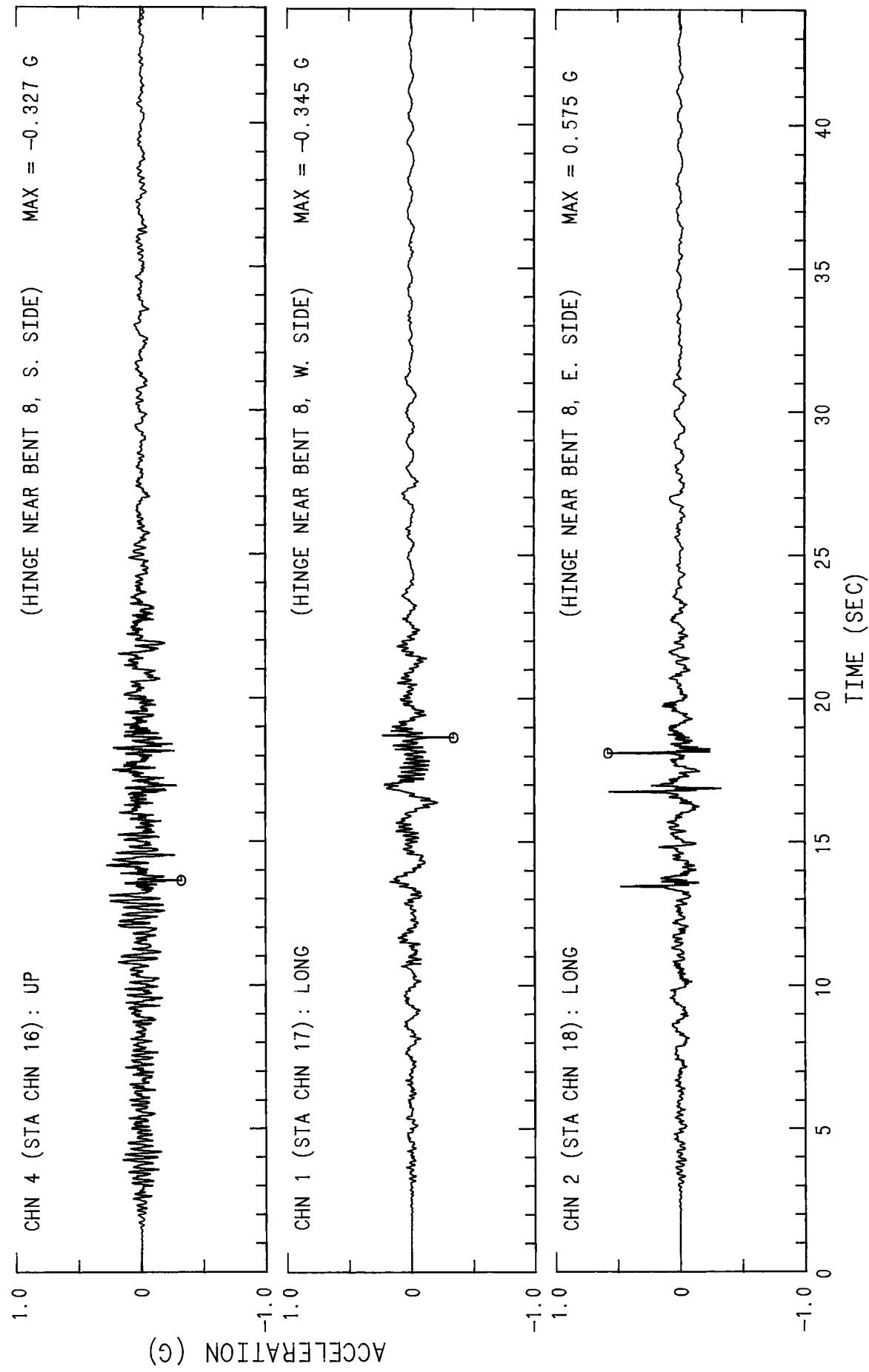
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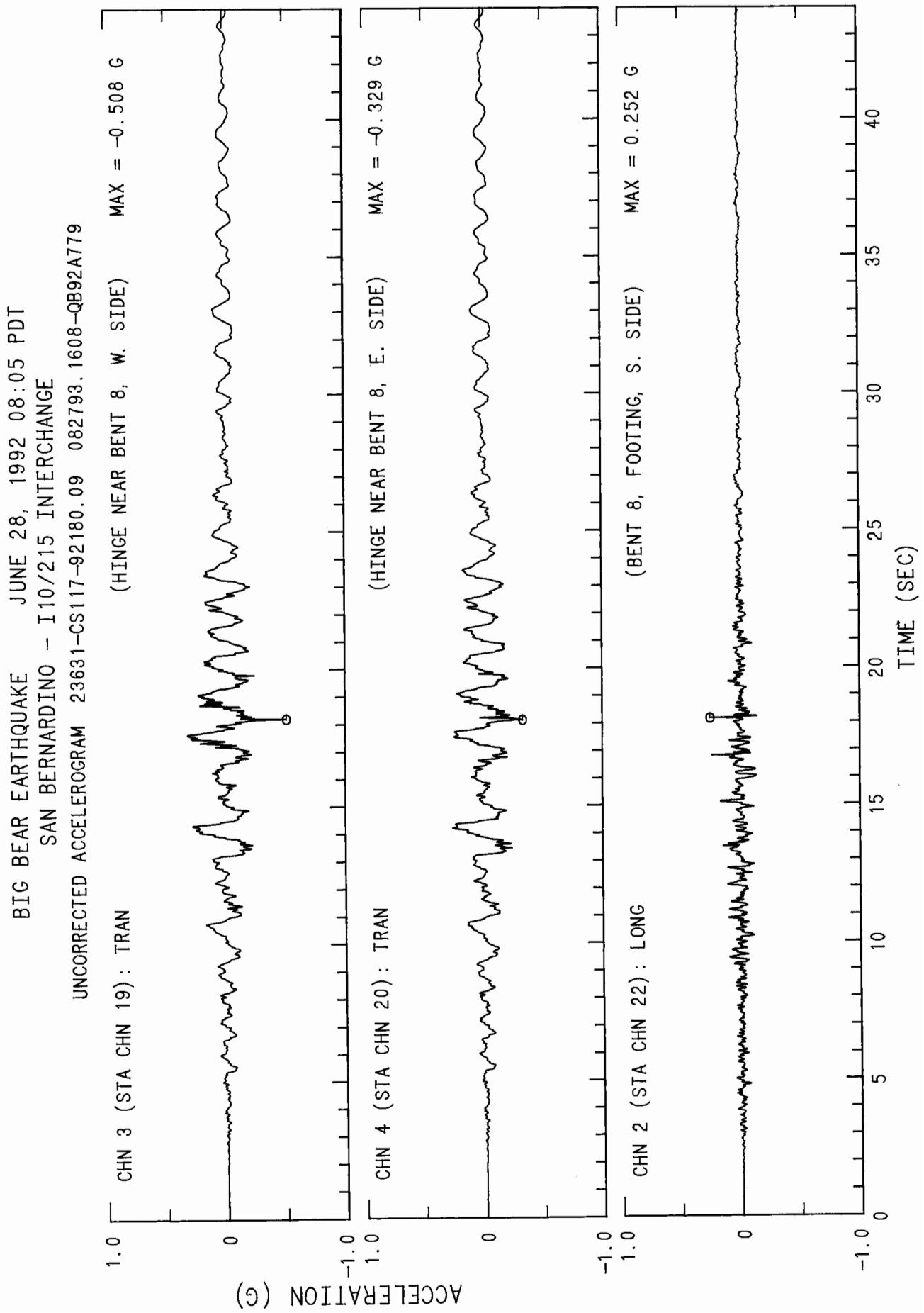


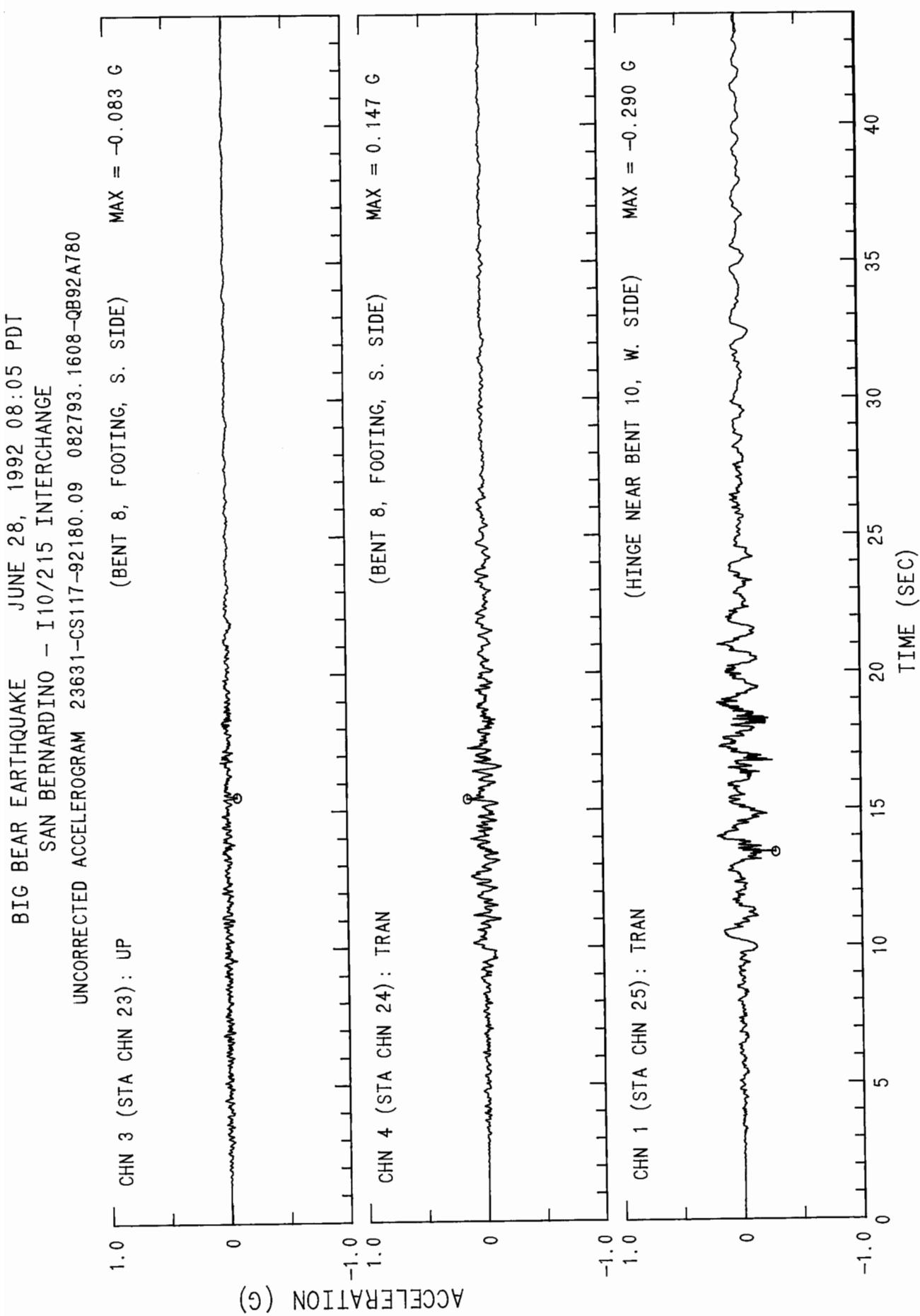
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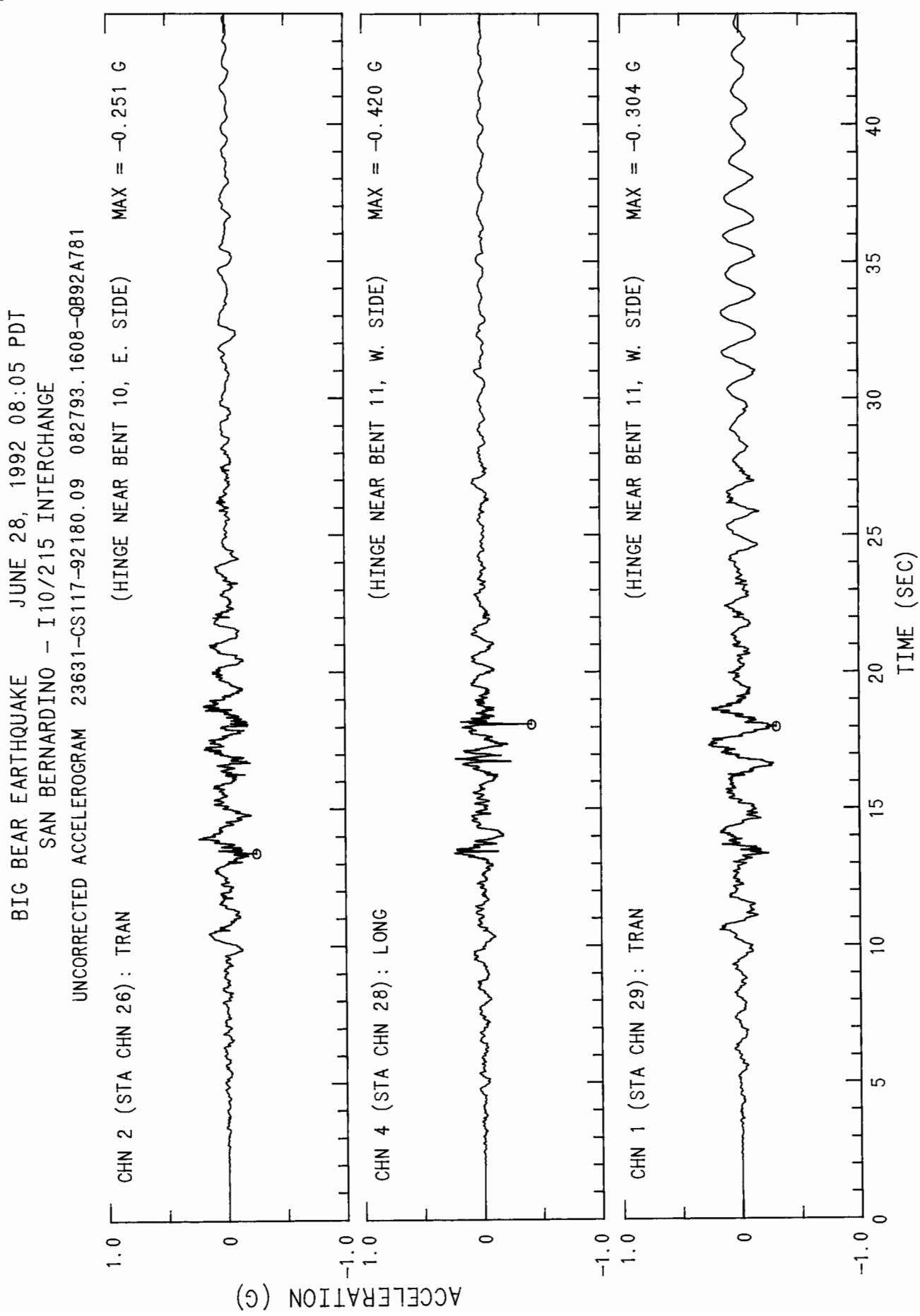


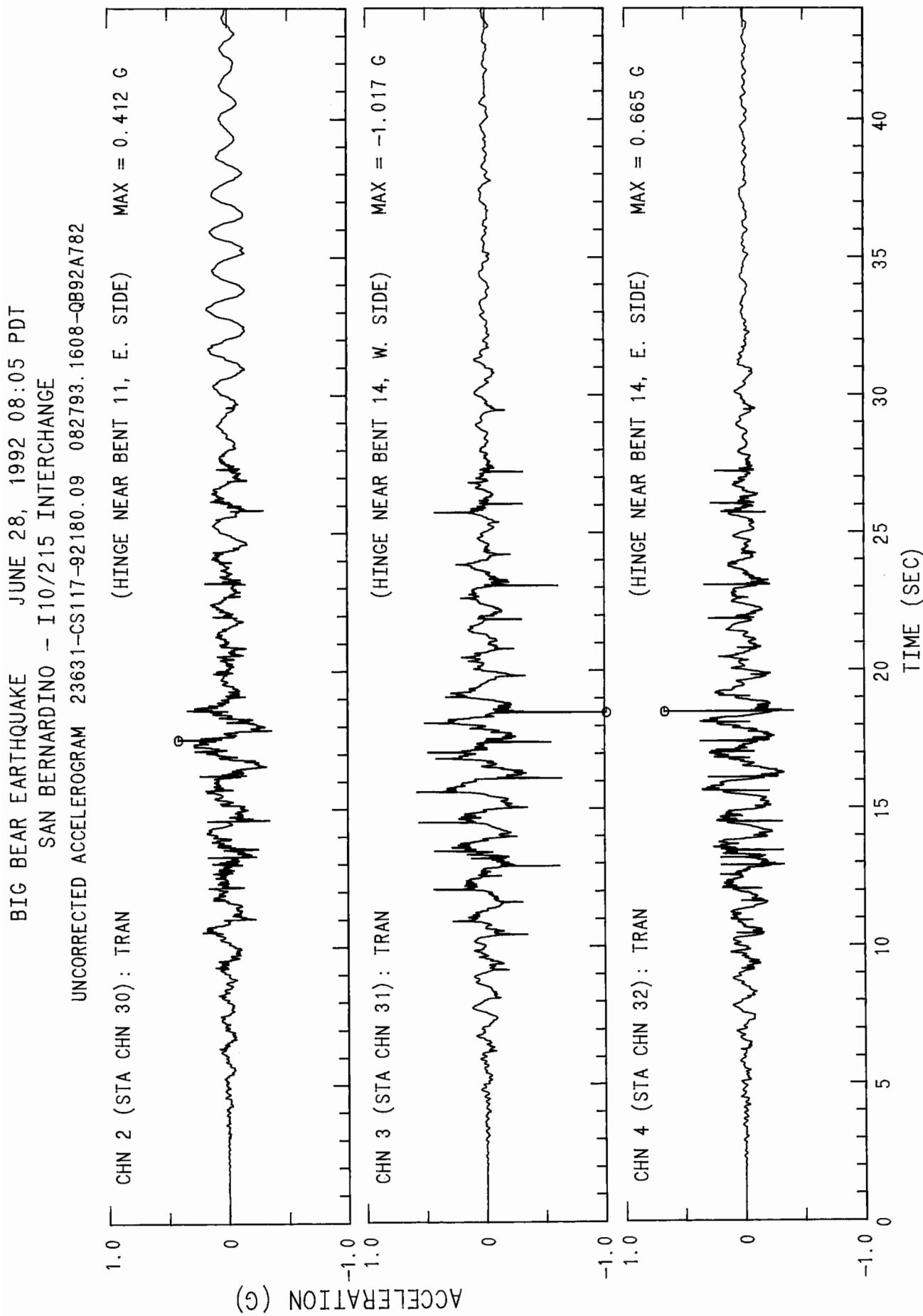
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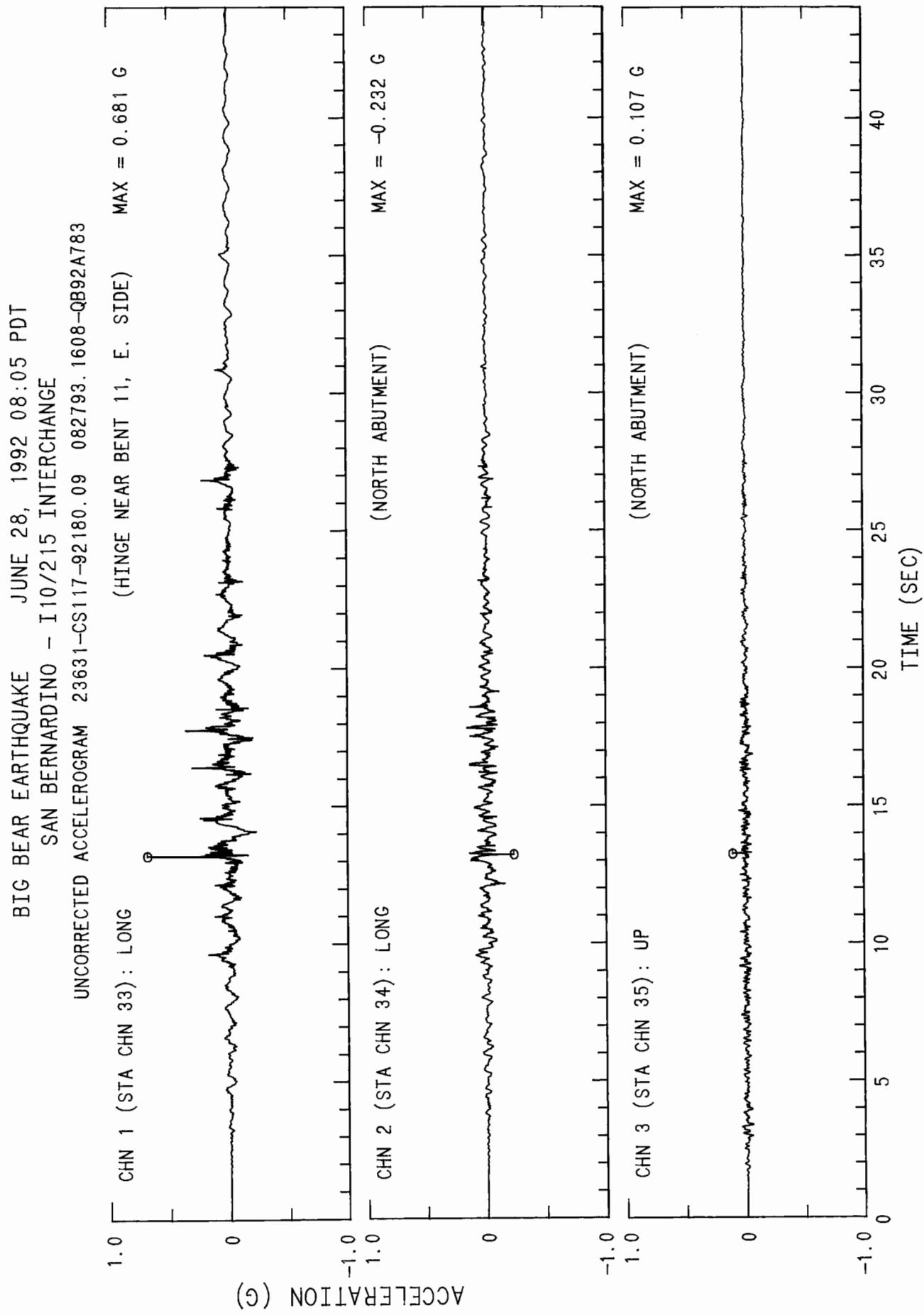


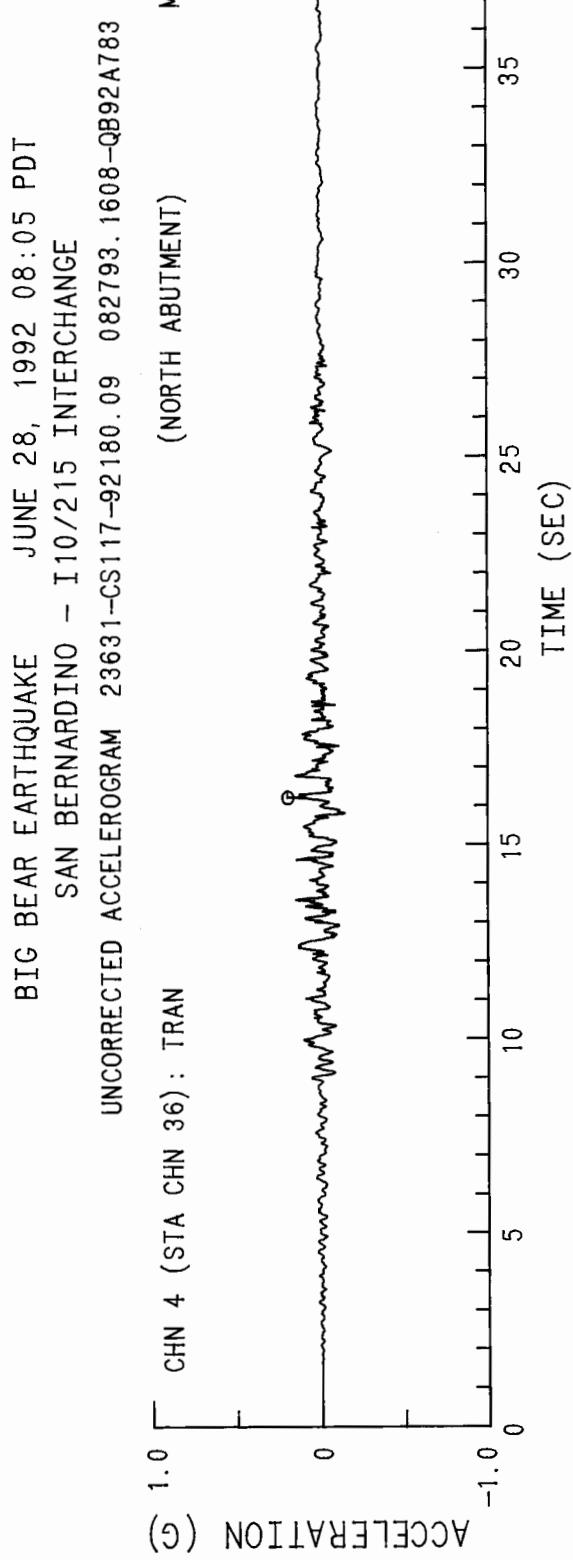




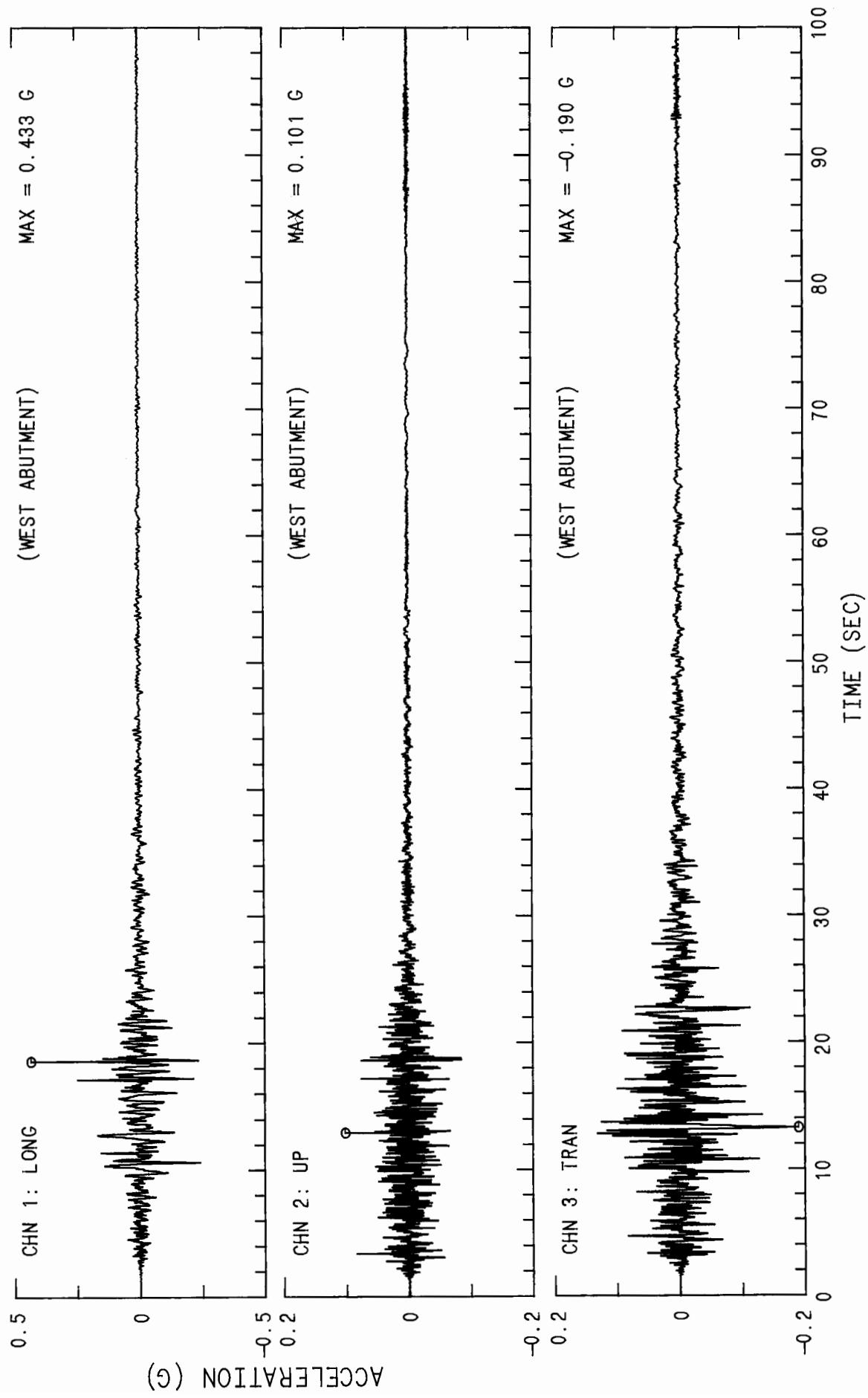




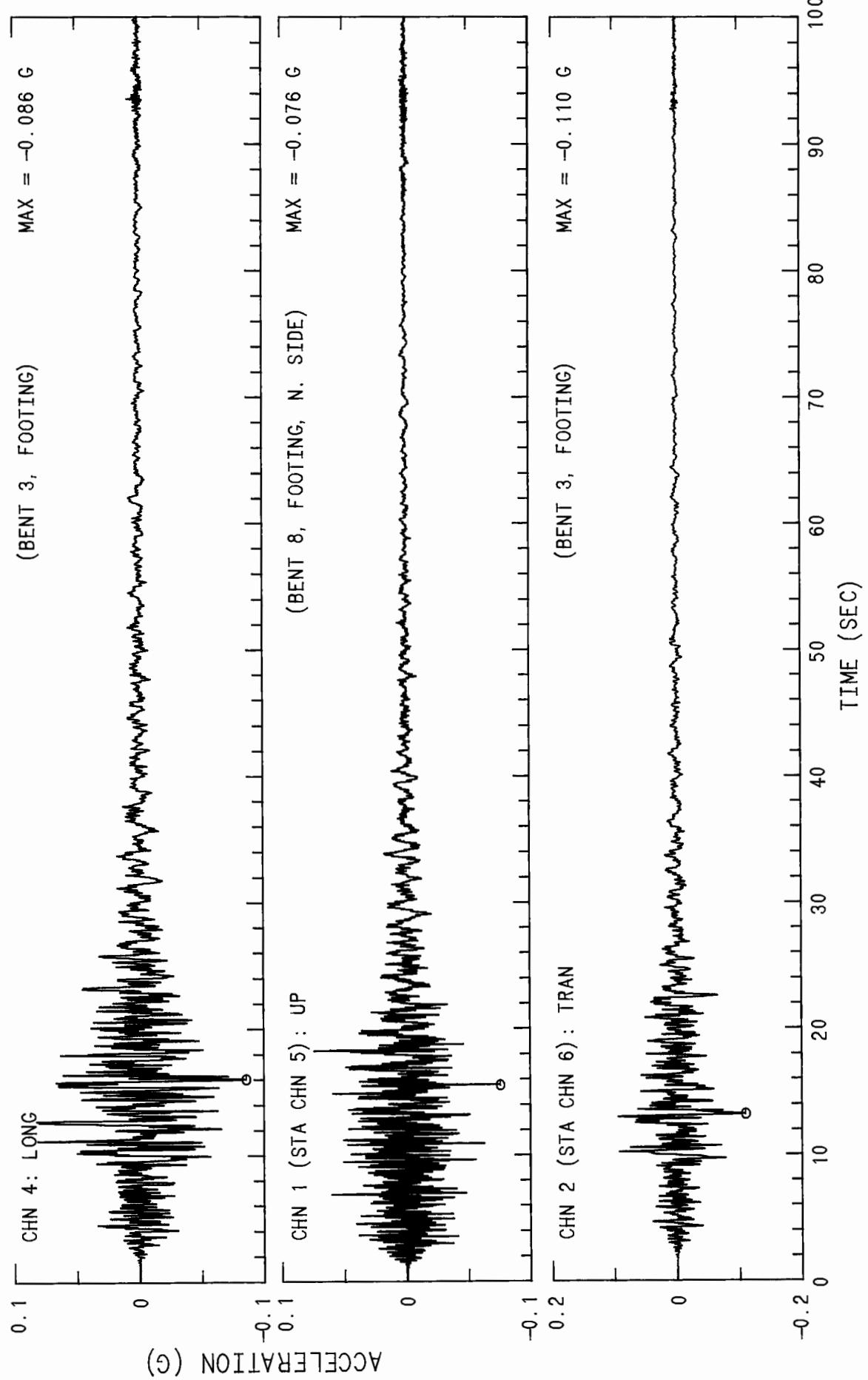


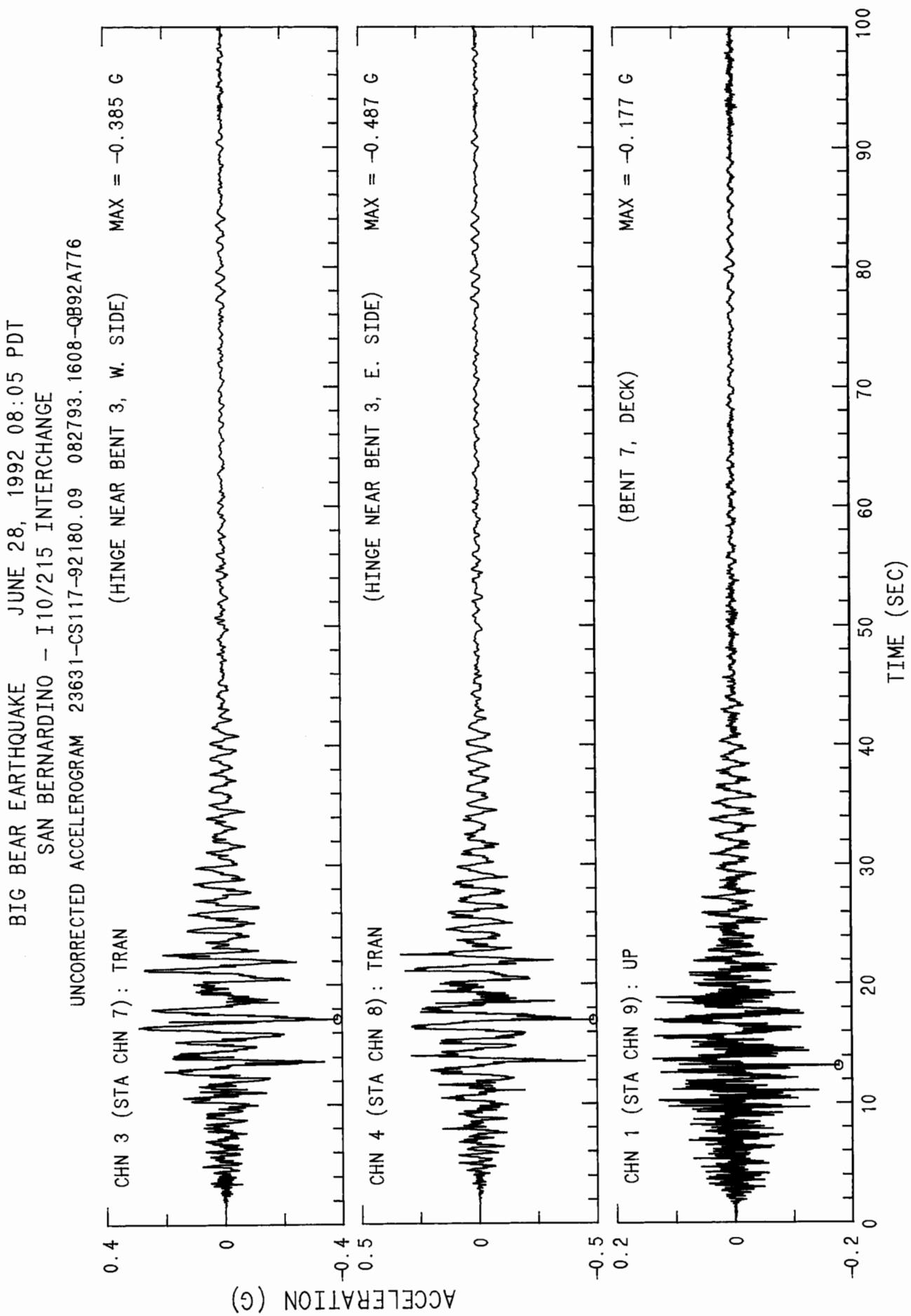


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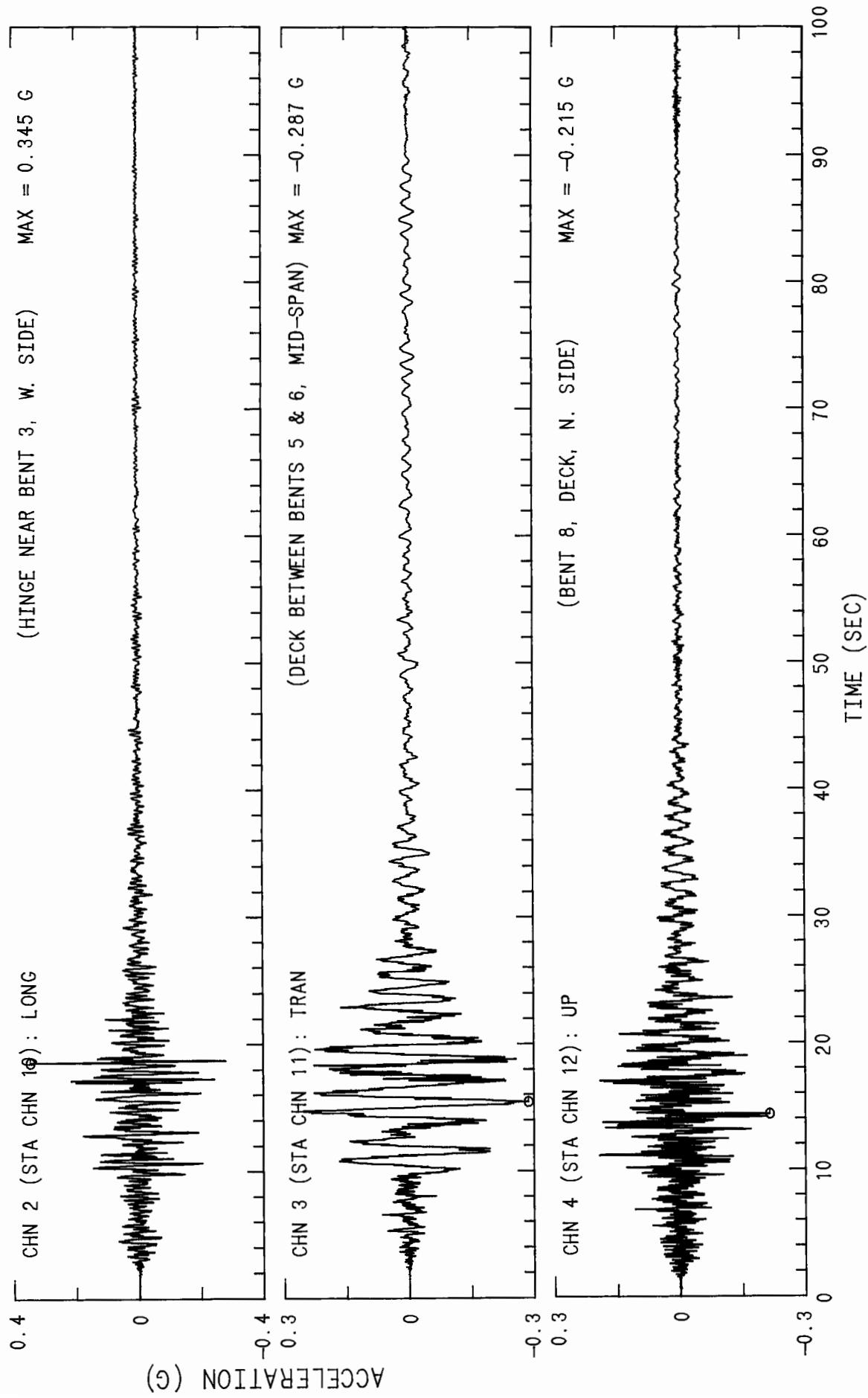


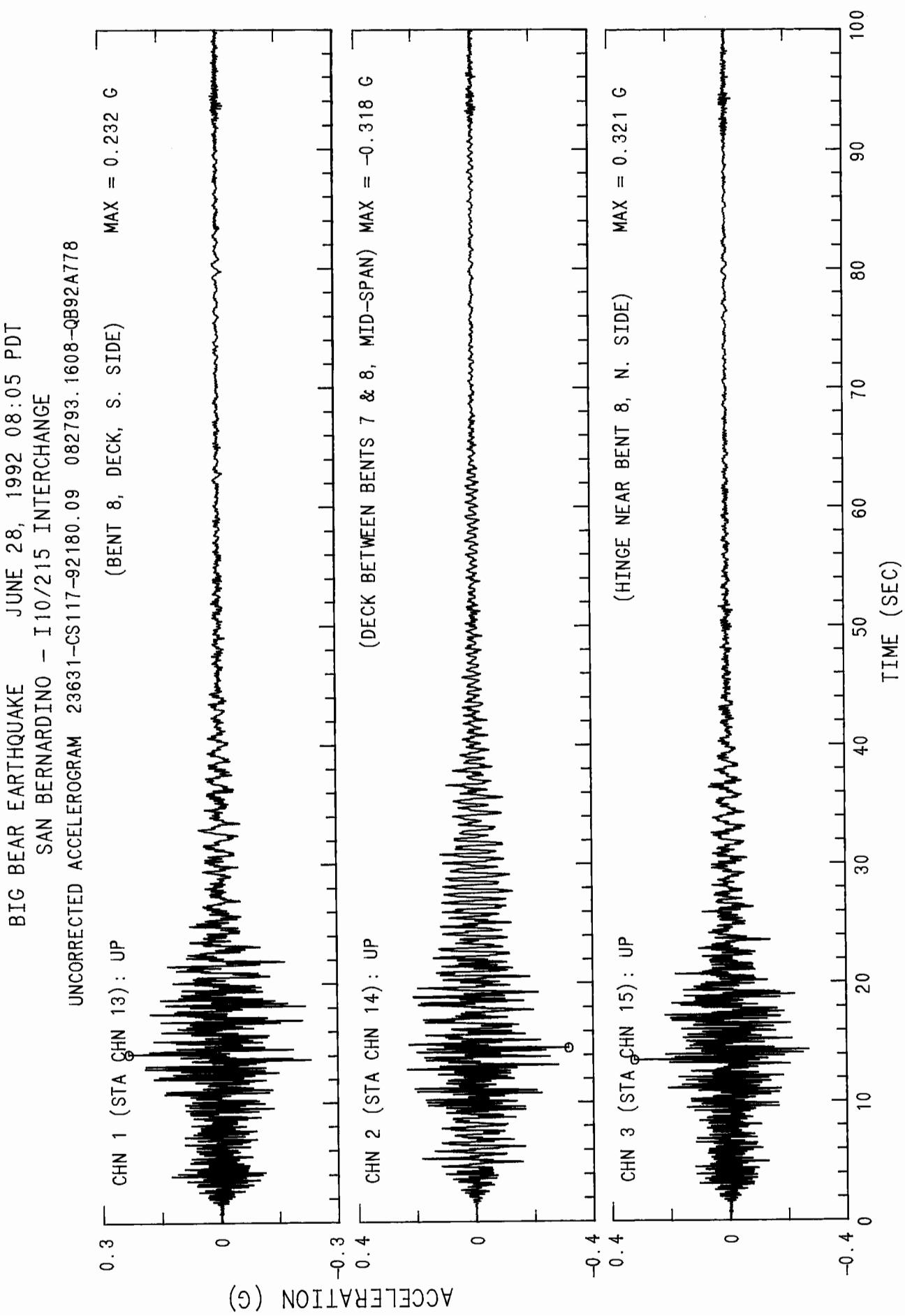
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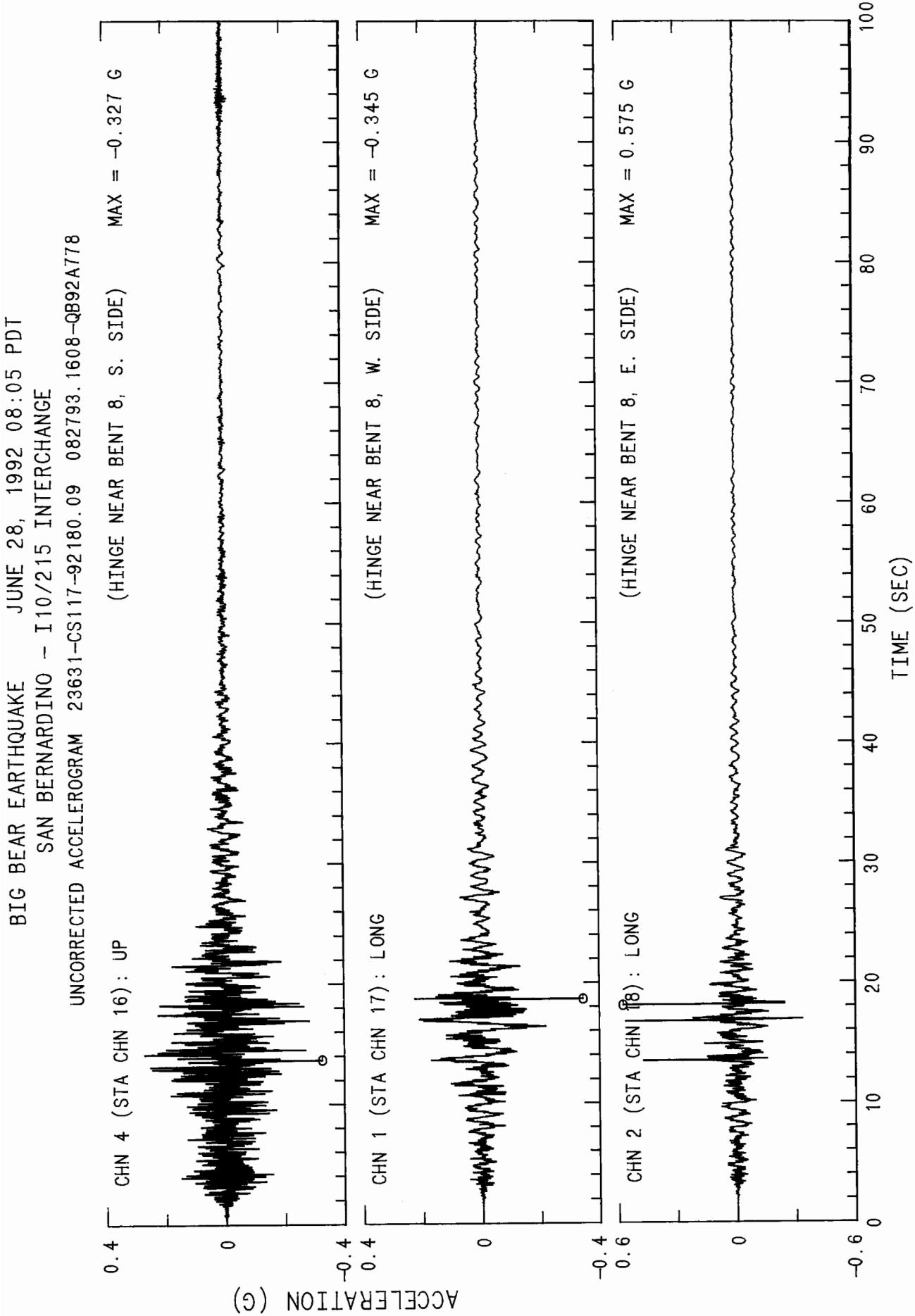




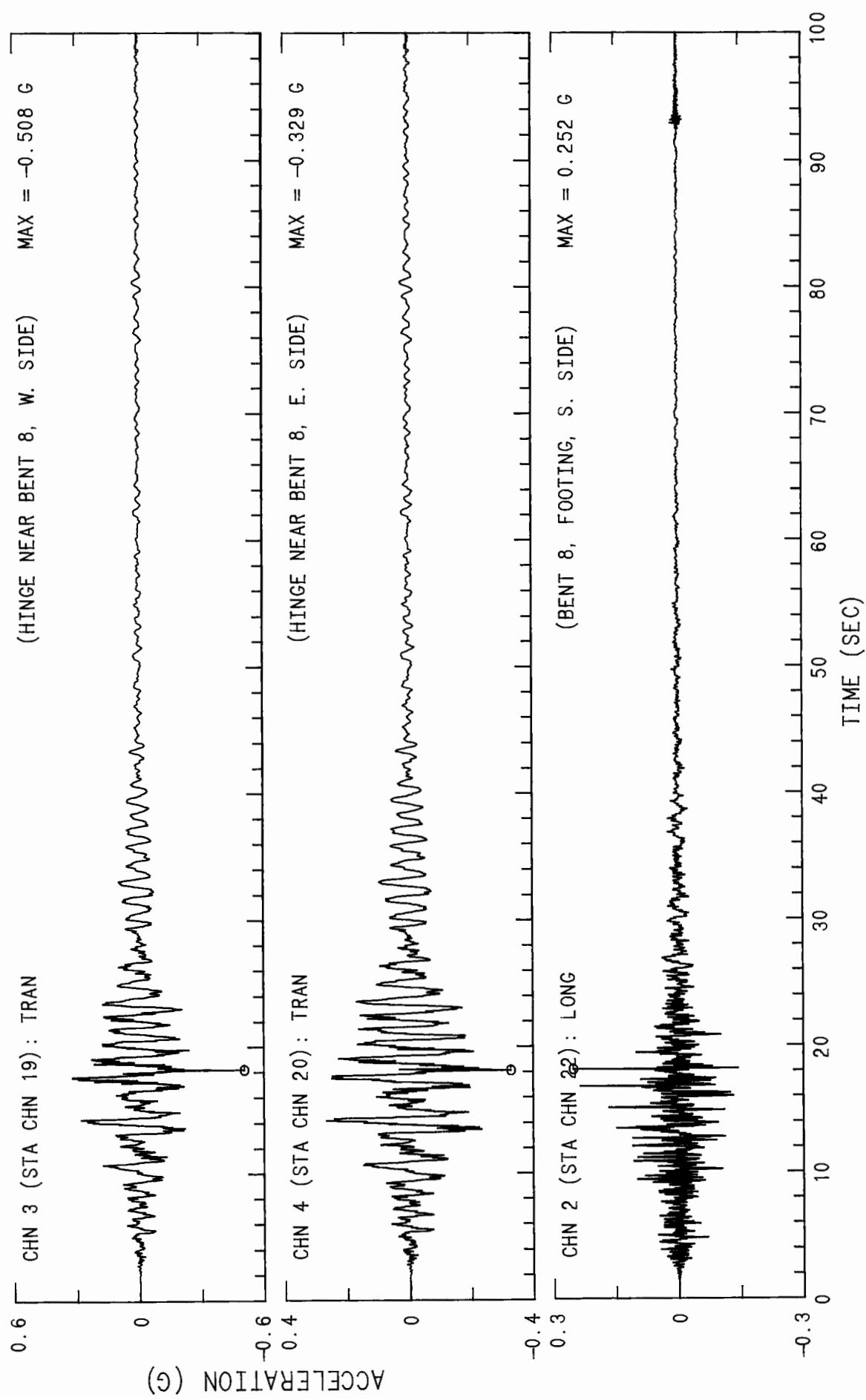
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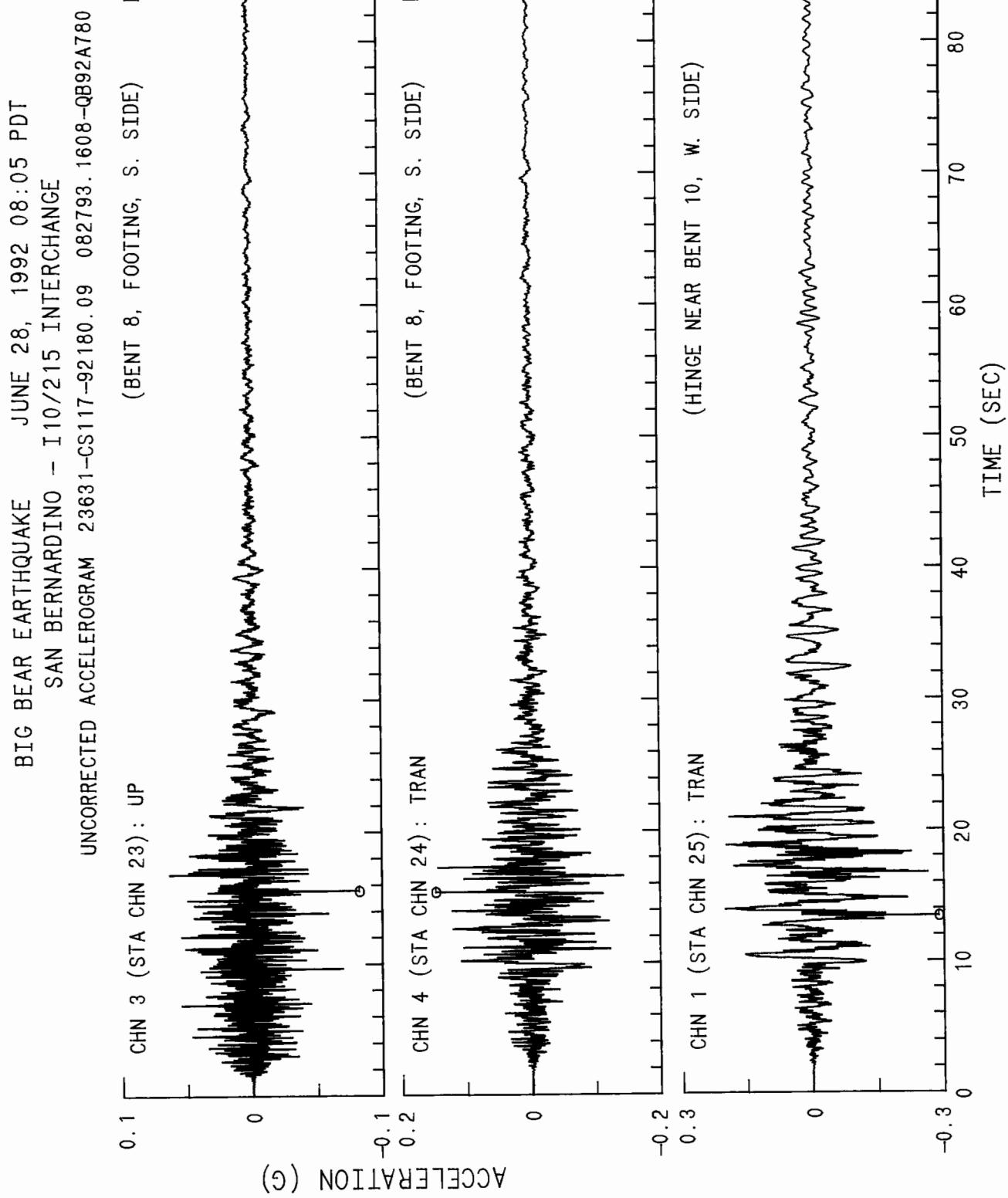


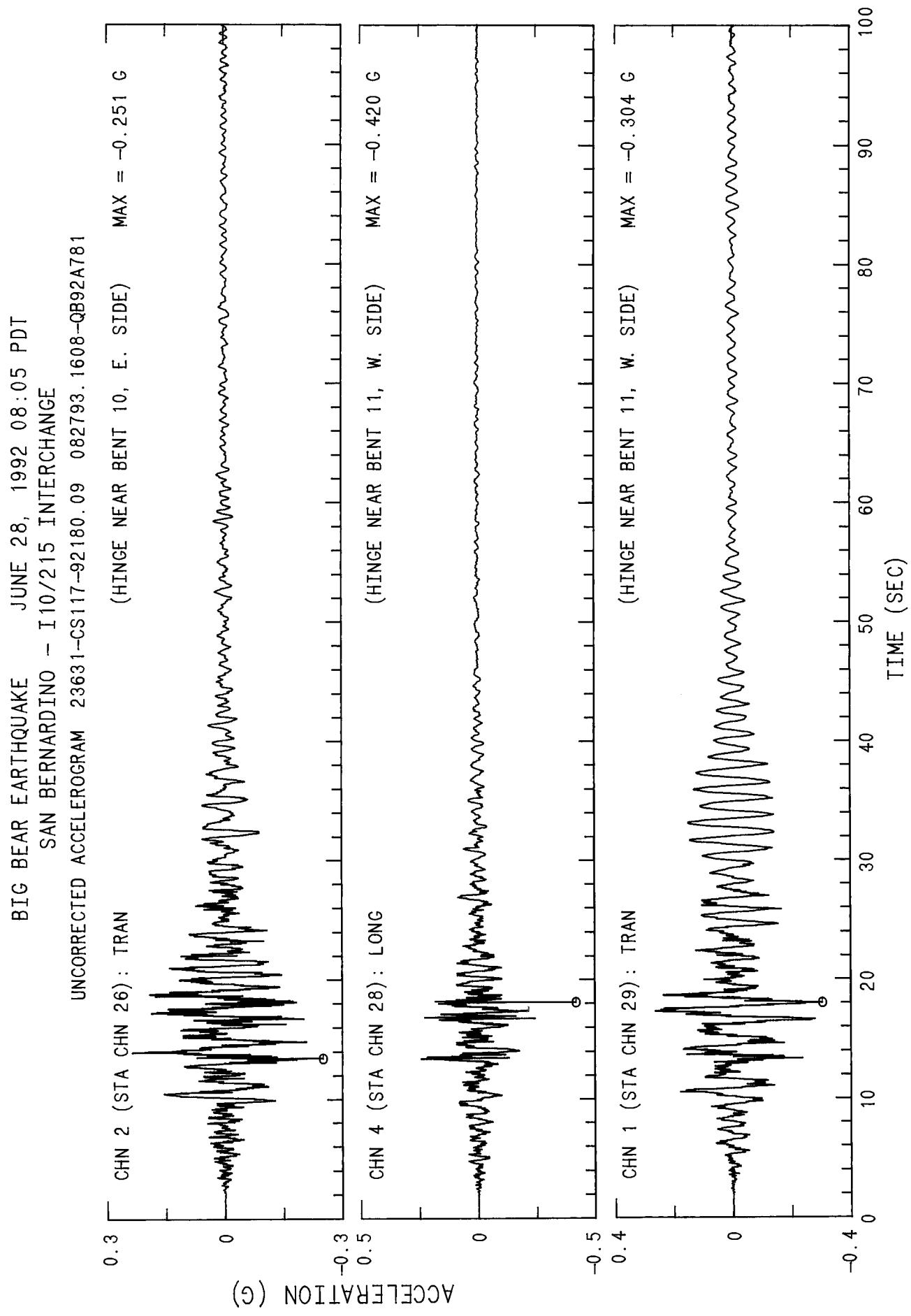


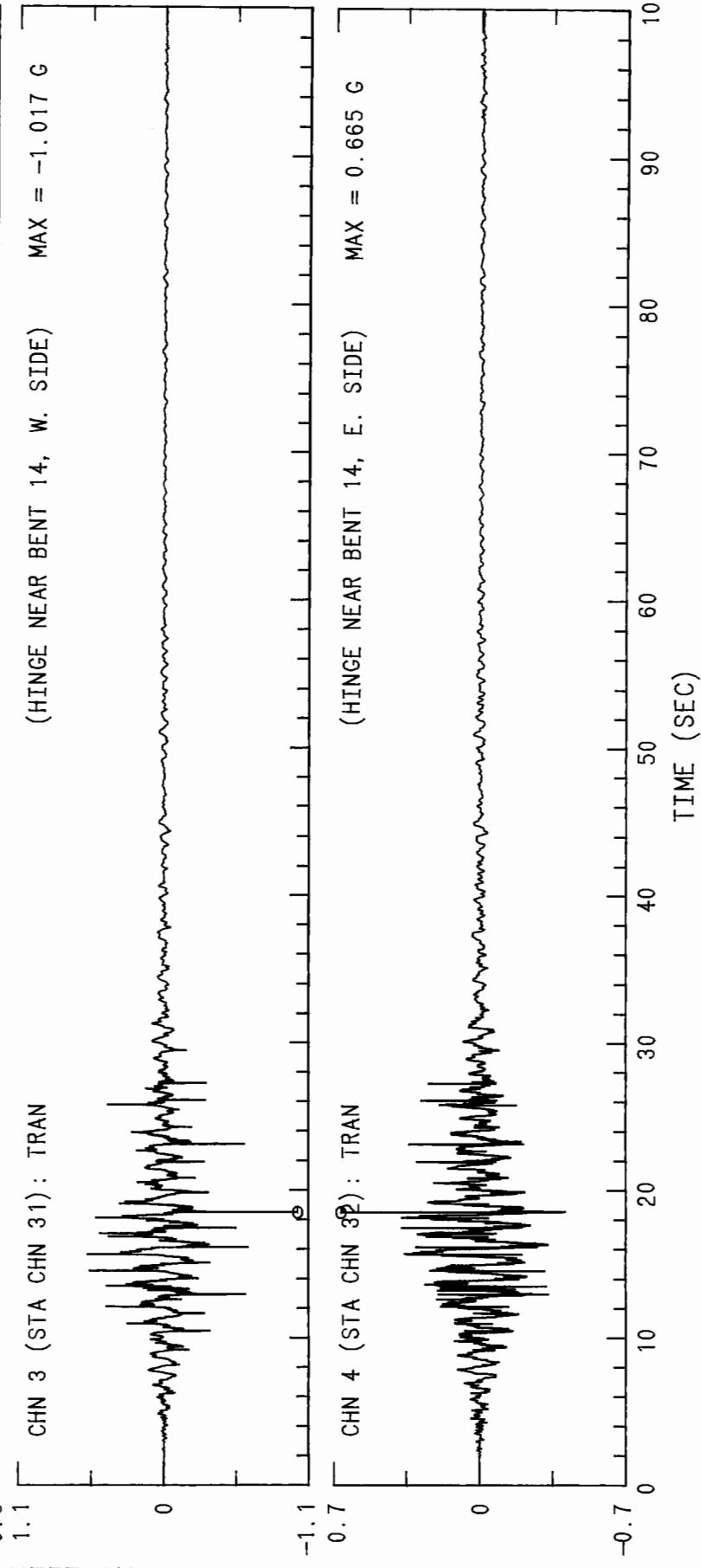
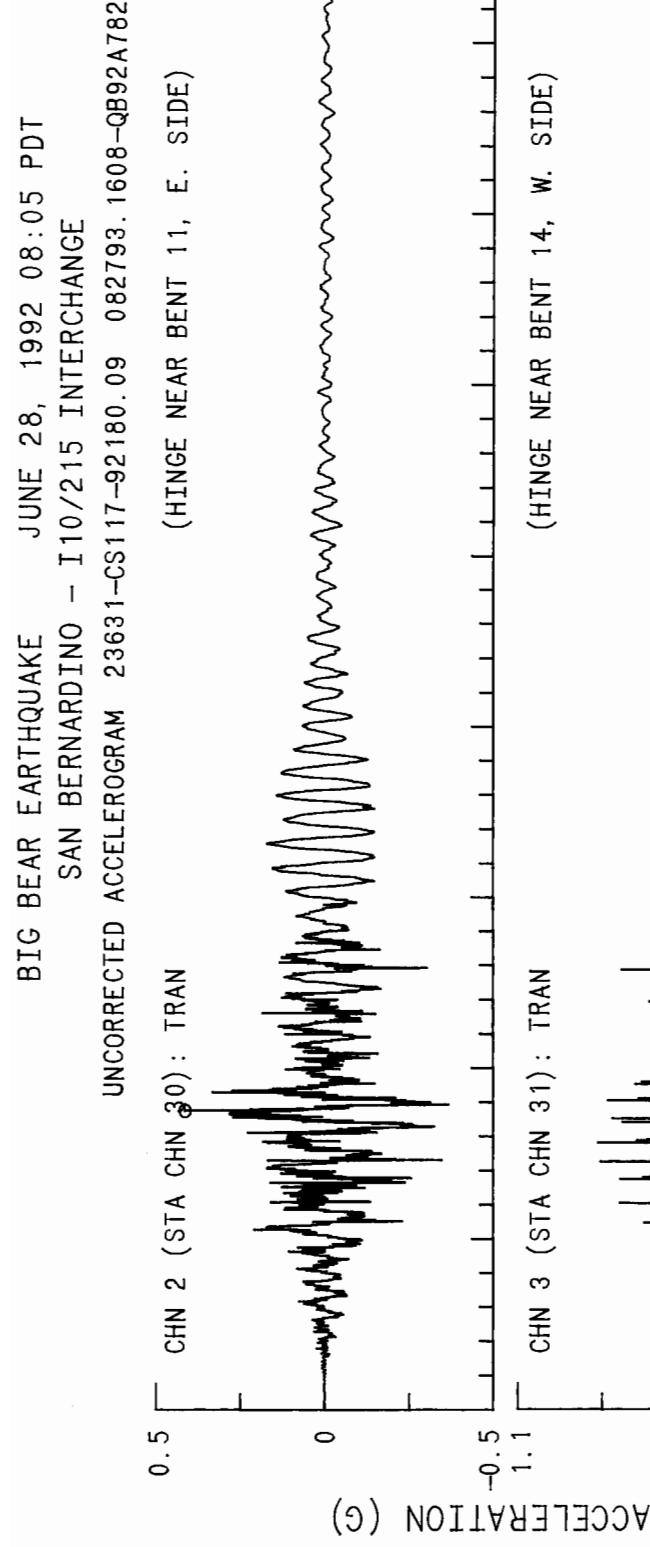


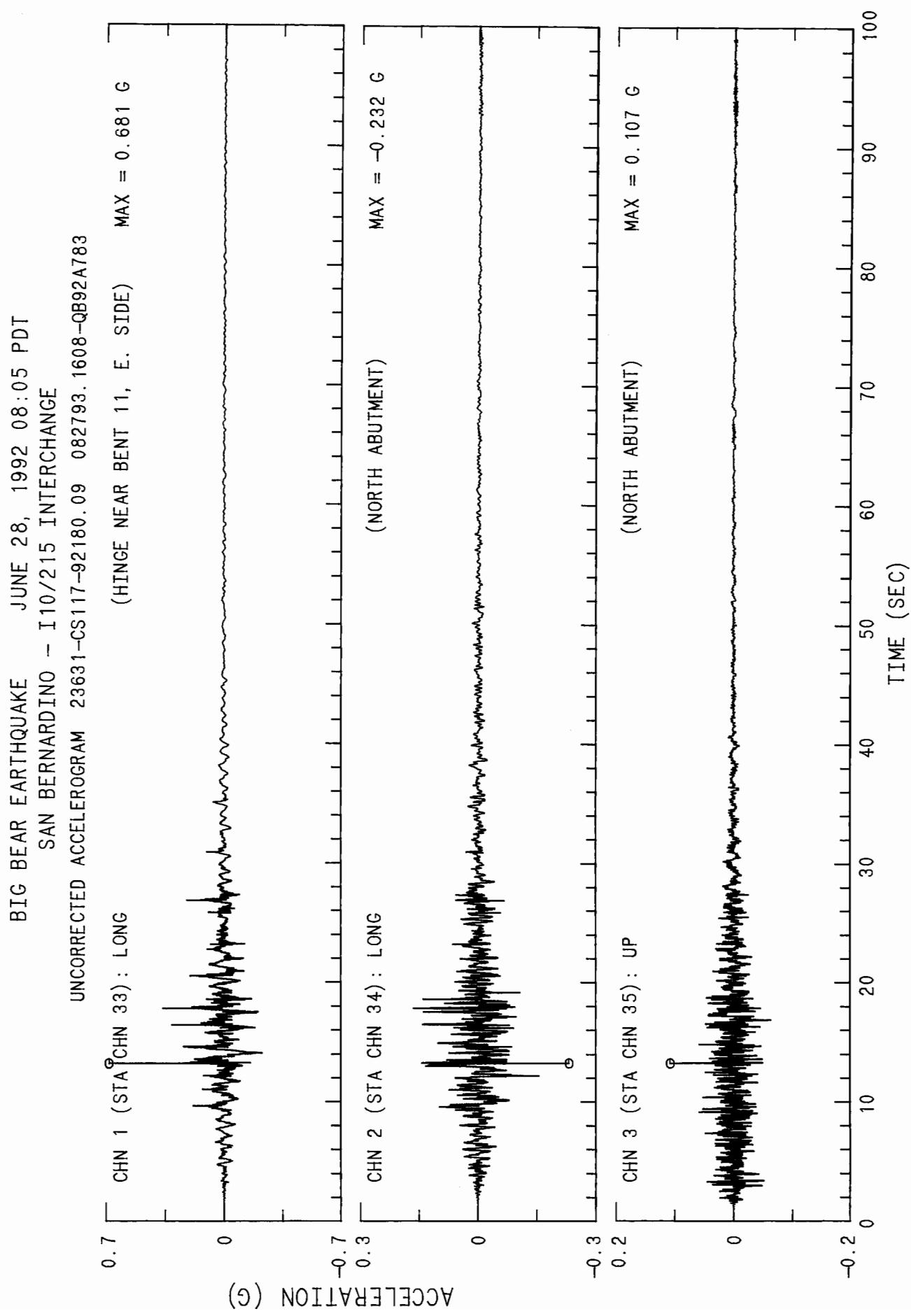
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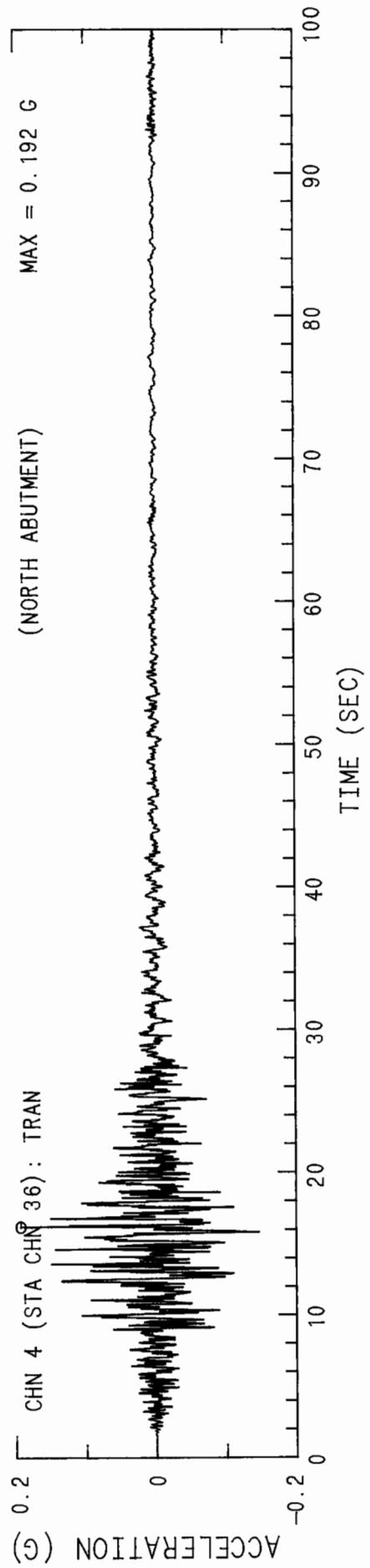




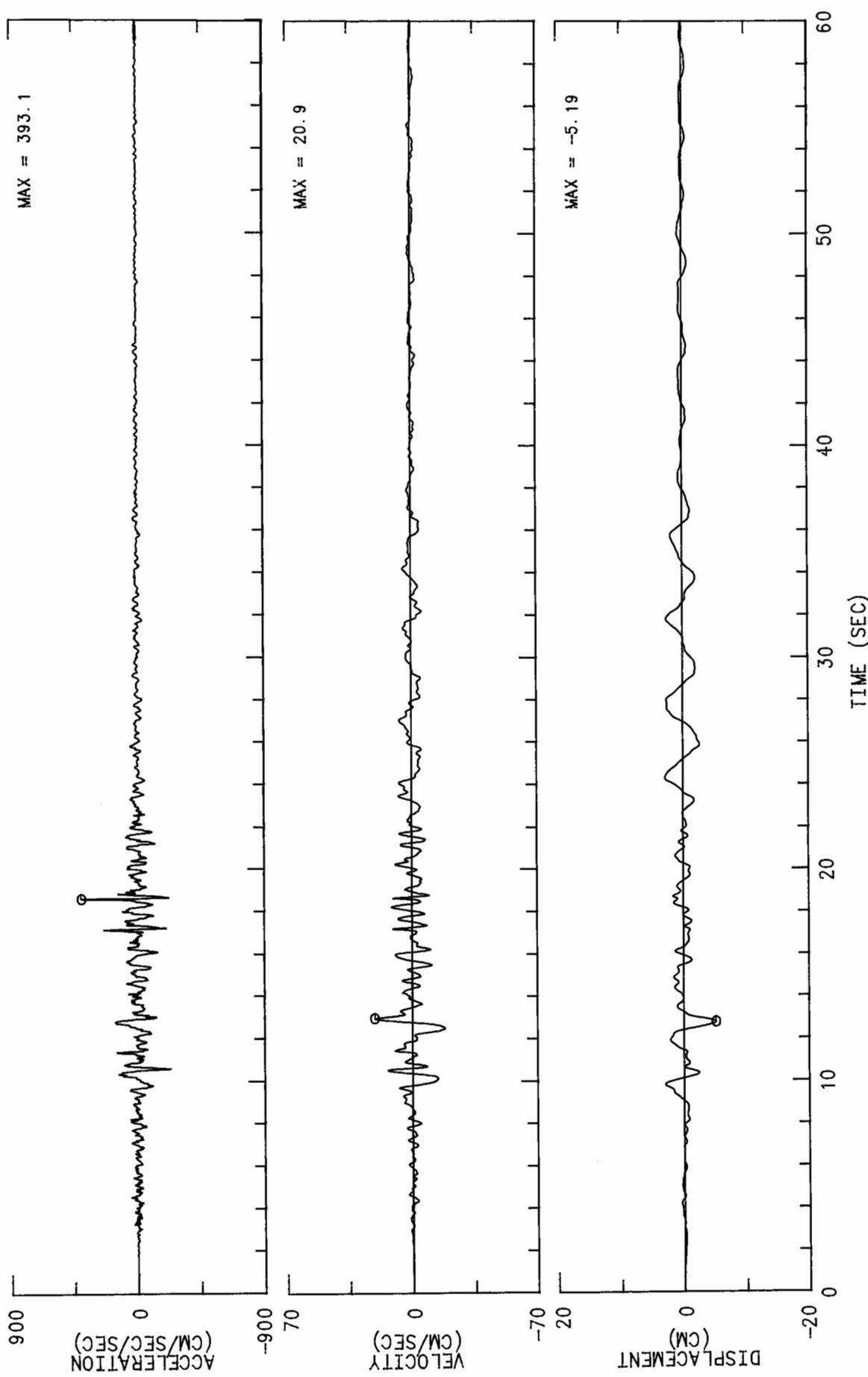


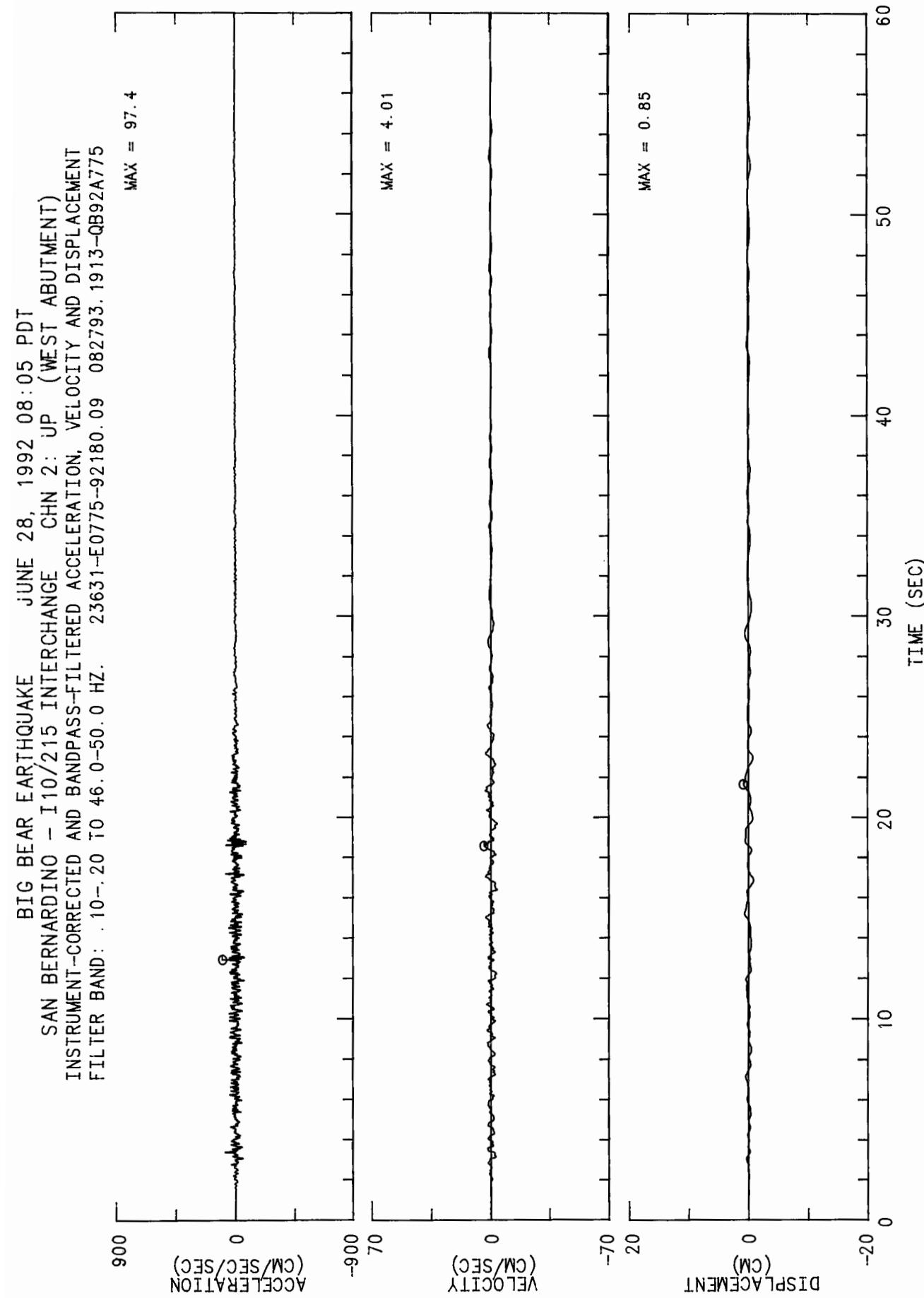


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
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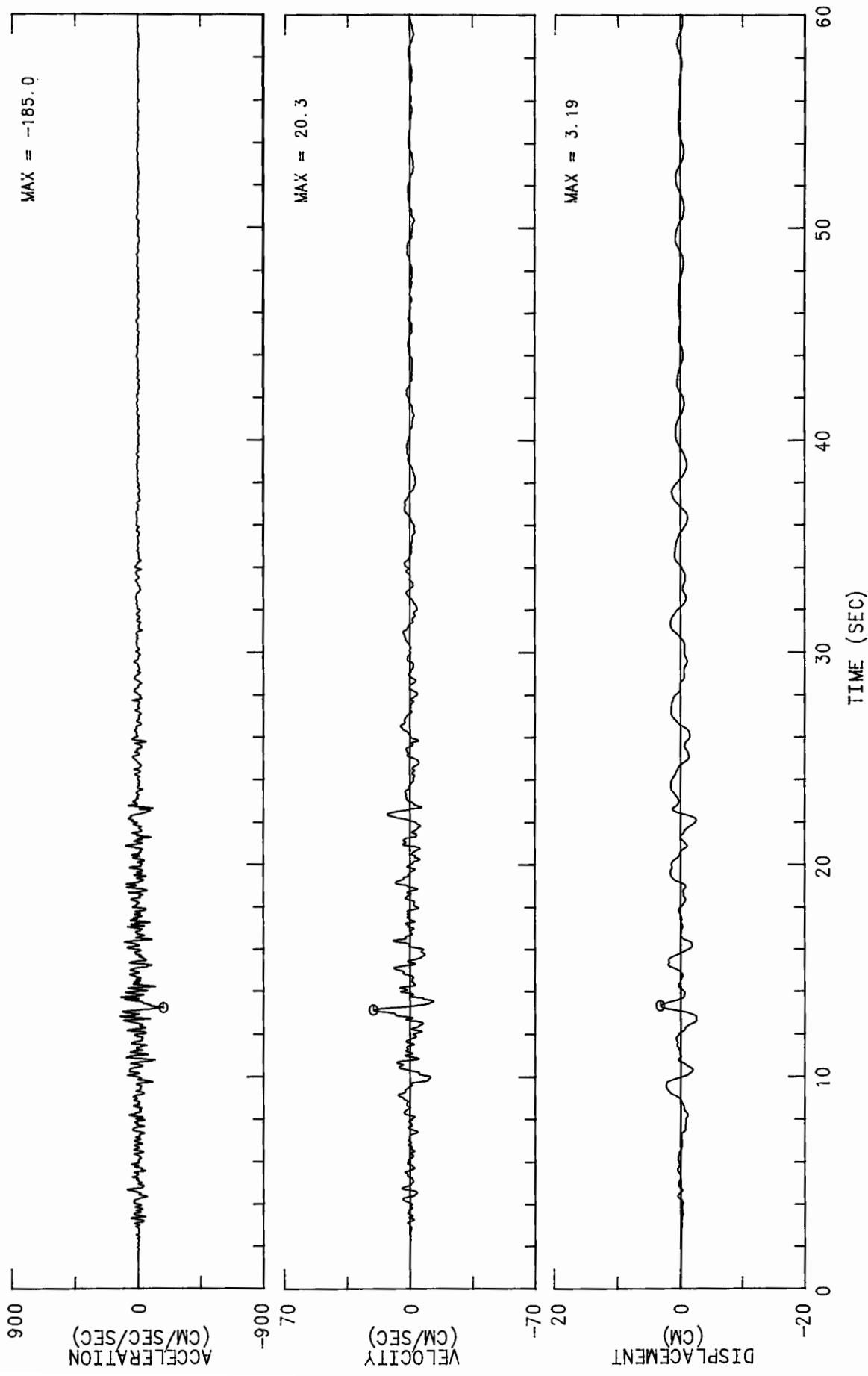


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1: LONG (WEST ABUTMENT)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0775-92180.09 082793.1913-QB92A775

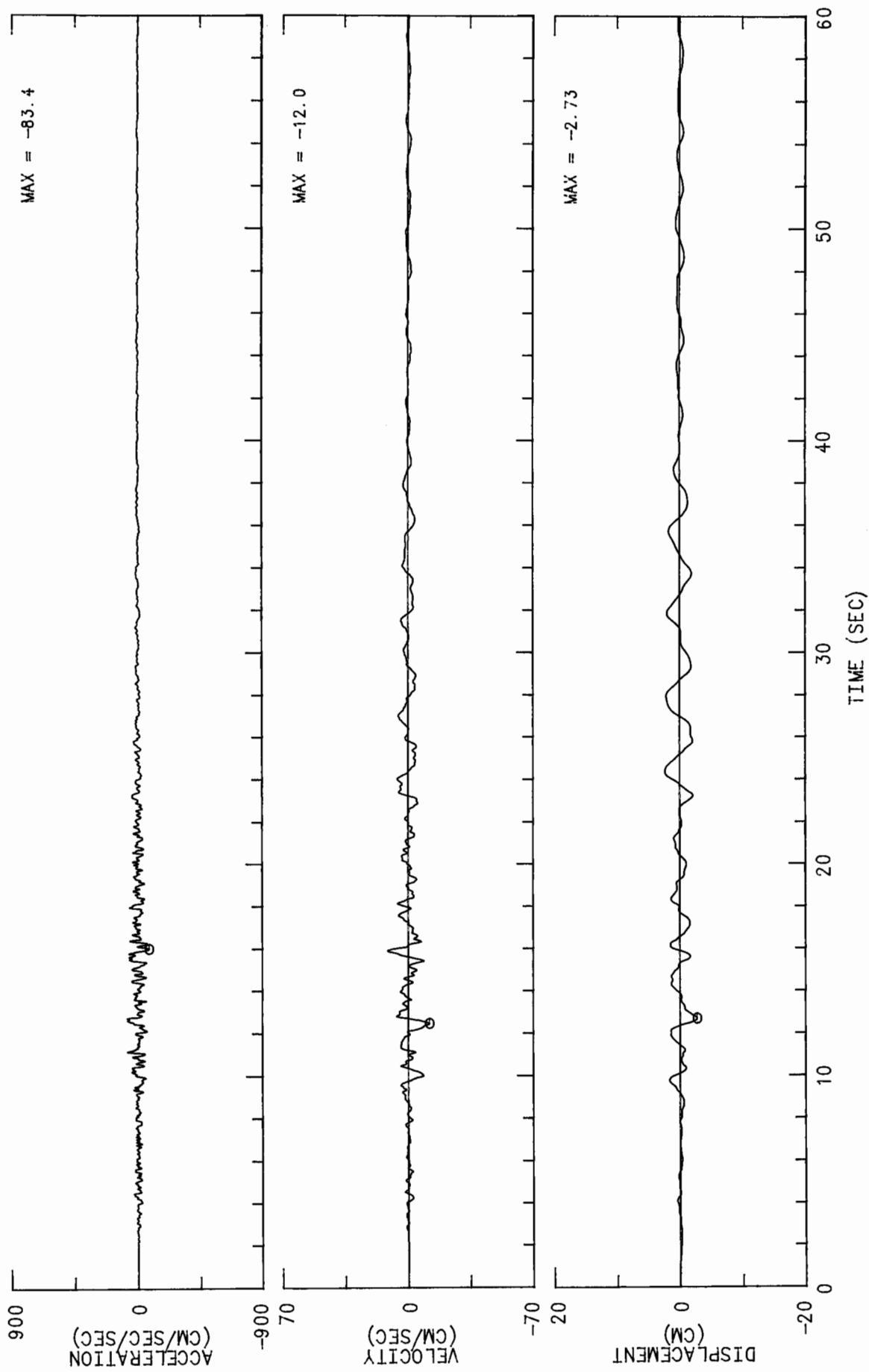


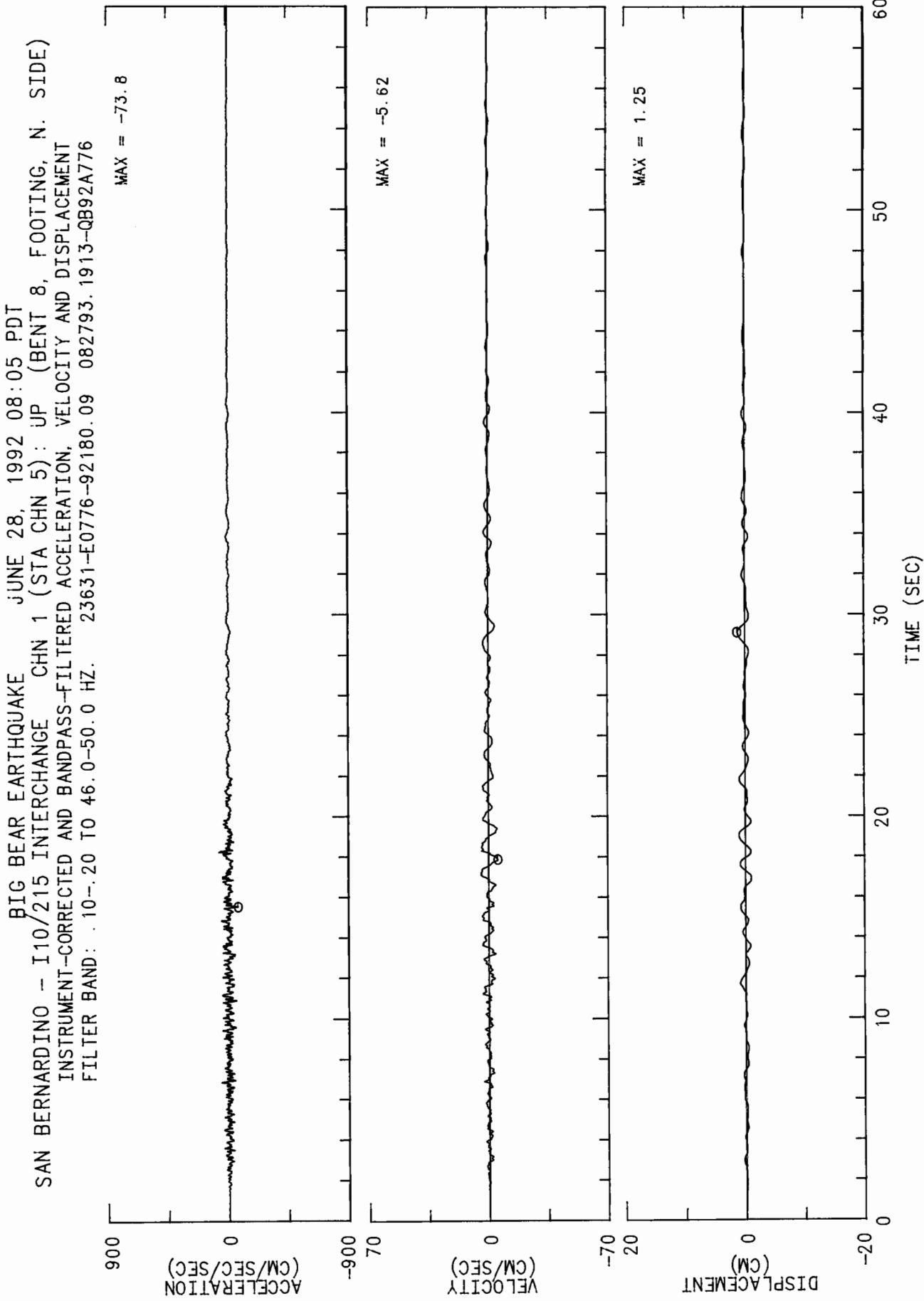


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 3: TRAN (WEST ABUTMENT)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 Hz. 23631-E0775-92180.09 082793.1913-QB92A775

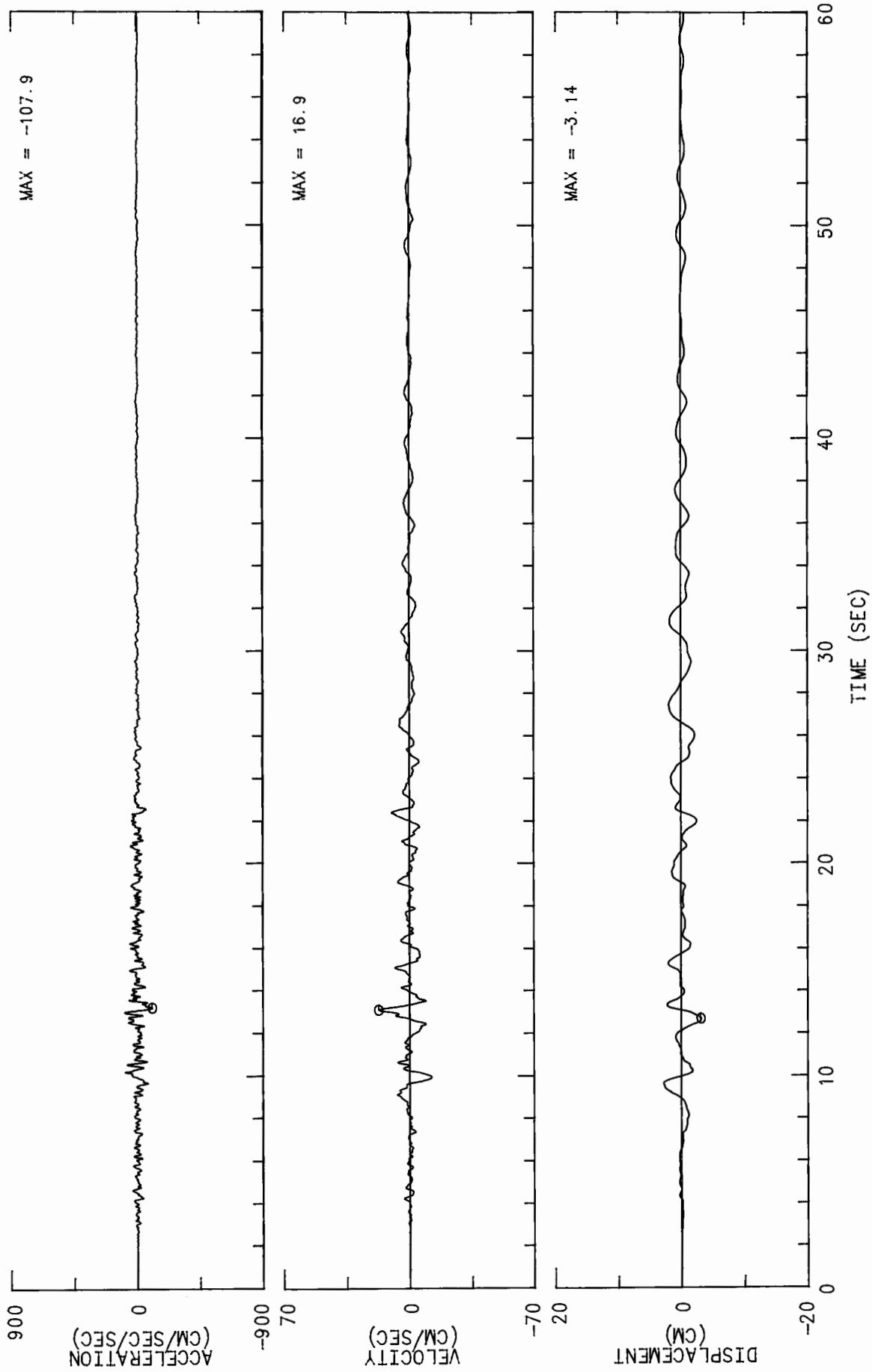


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4: LONG (BENT 3, FOOTING)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10--.20 TO 46.0-50.0 HZ. 23631-E0775-92180.09 082793.1913-QB92A775

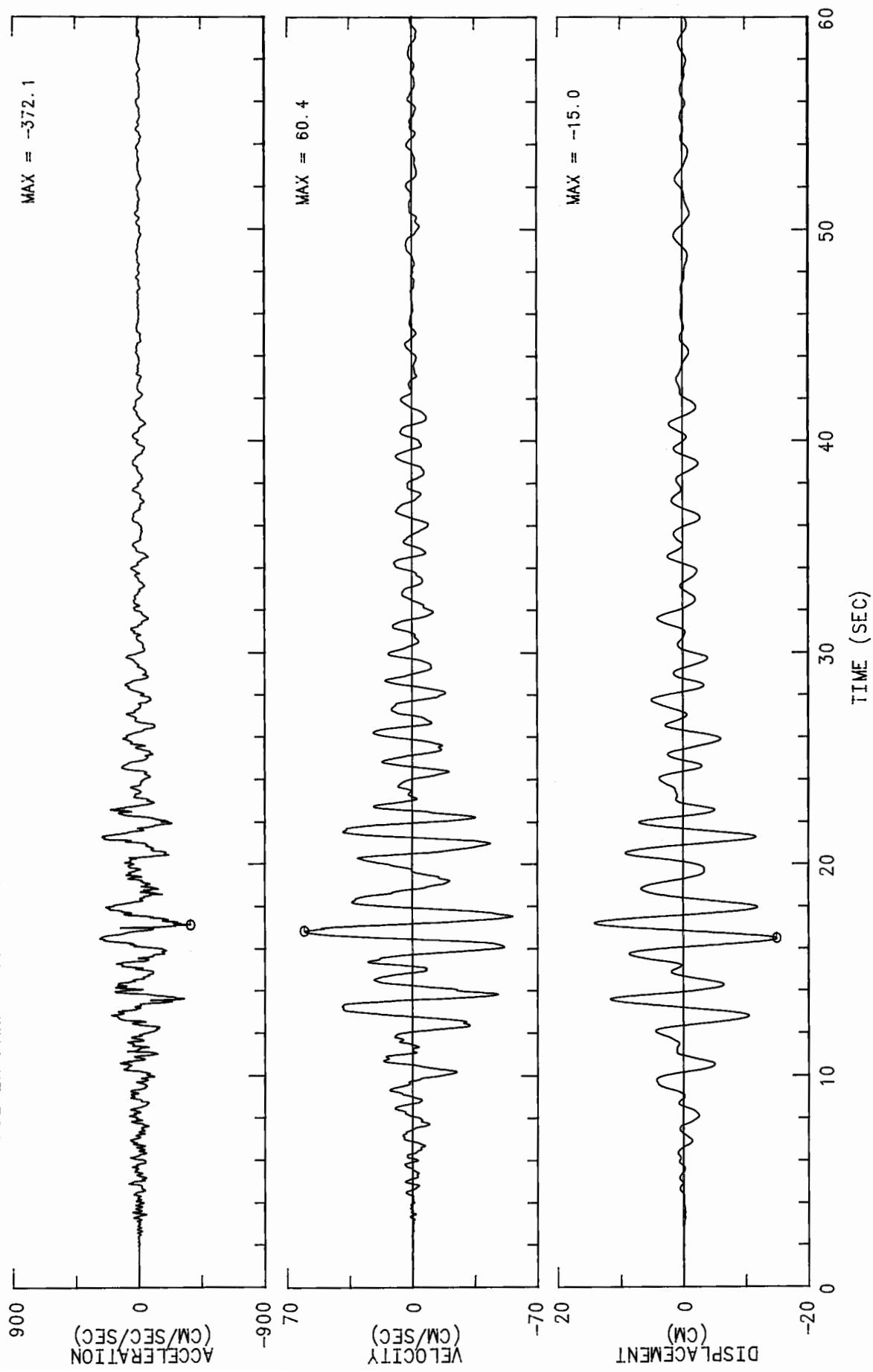




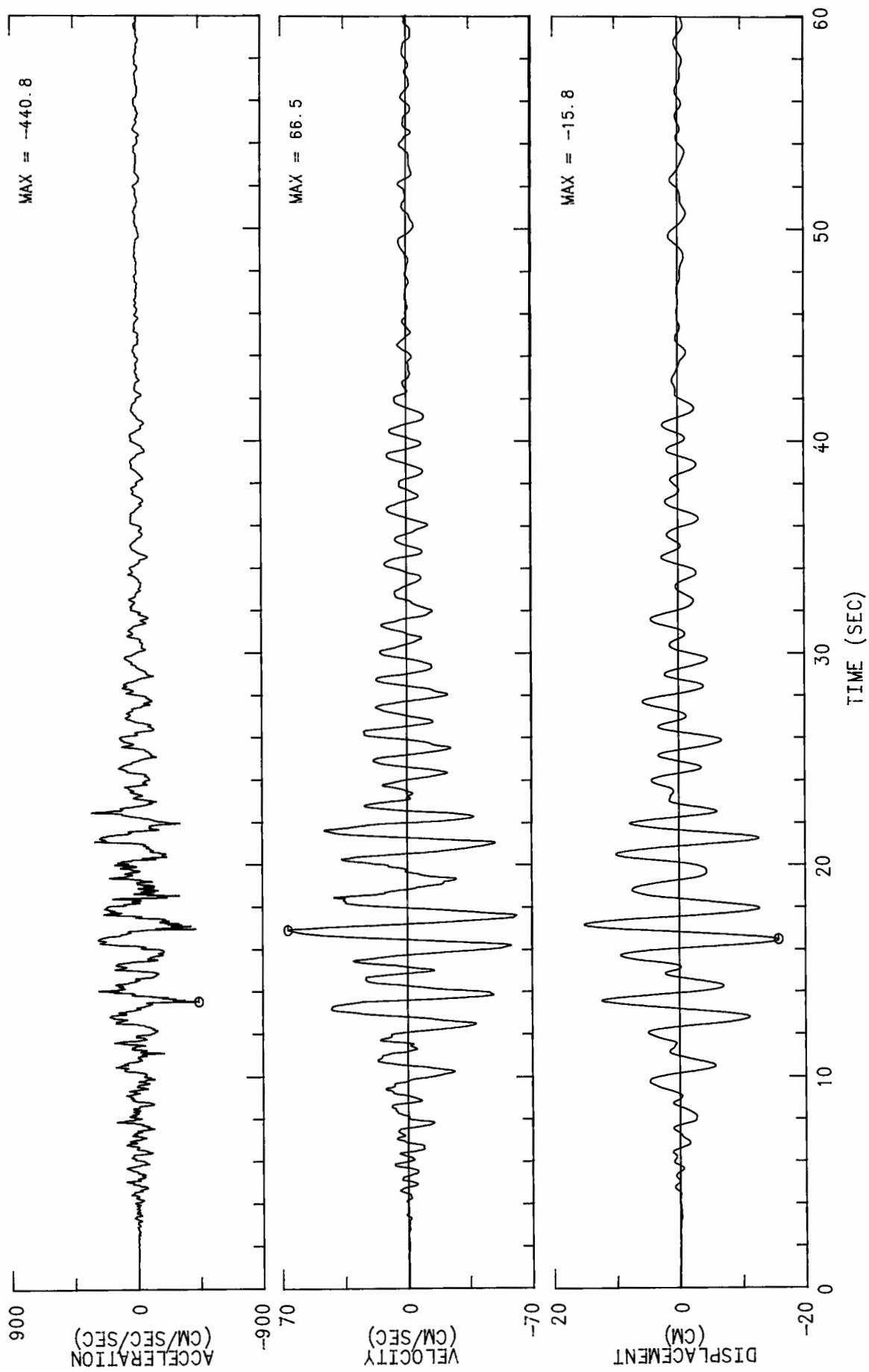
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SAN BERNARDINO - I 10/215 INTERCHANGE CHN 2 (STA CHN 6) : TRAN (BENT 3, FOOTING)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND : .10--.20 TO 46.0-50.0 HZ. 23631-E0776-92180.09 082793.1913-QB92A776



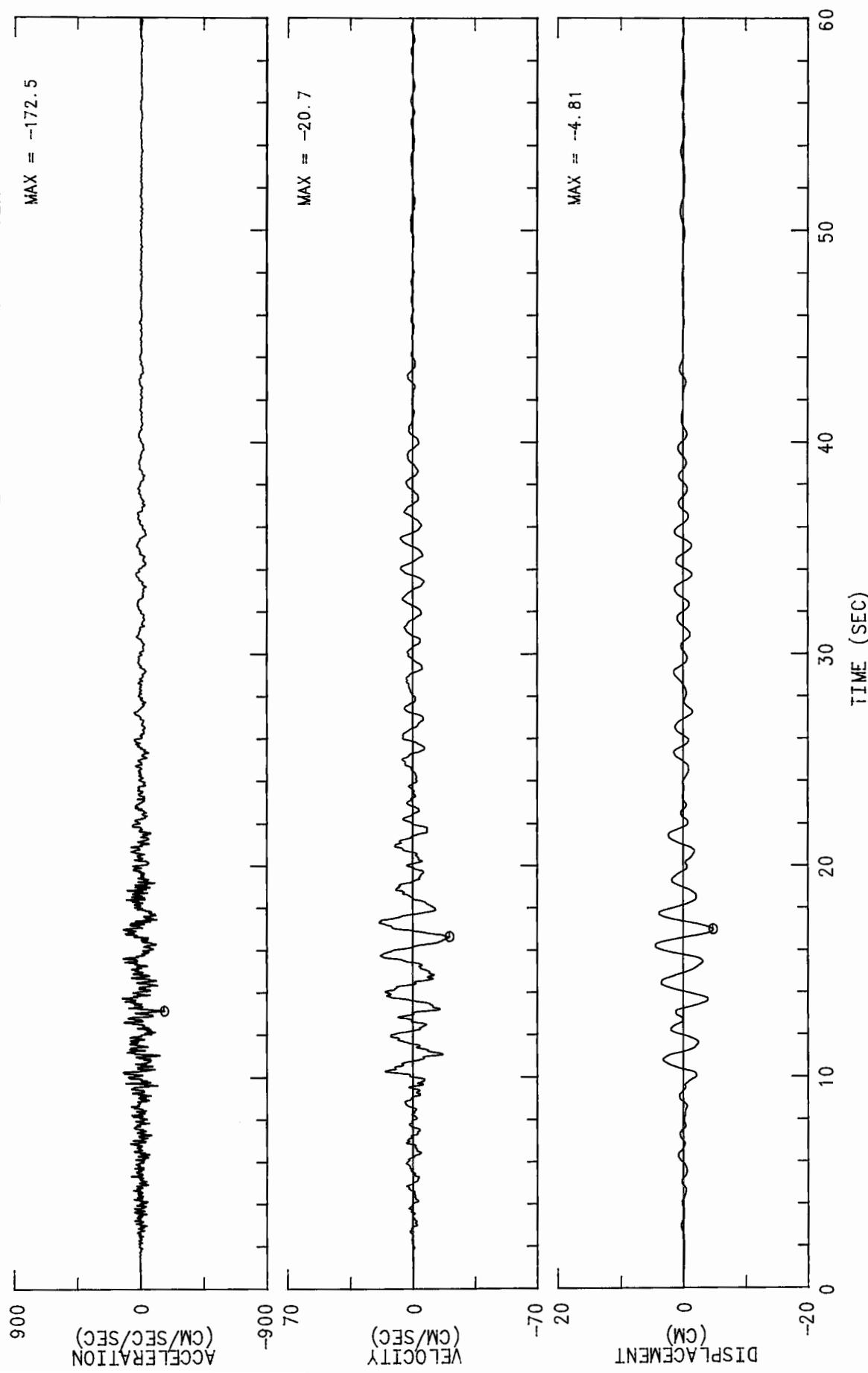
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 7) : TRAN (HINGE NEAR BENT 3, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0776-92180.09 082793.1913-QB92A776



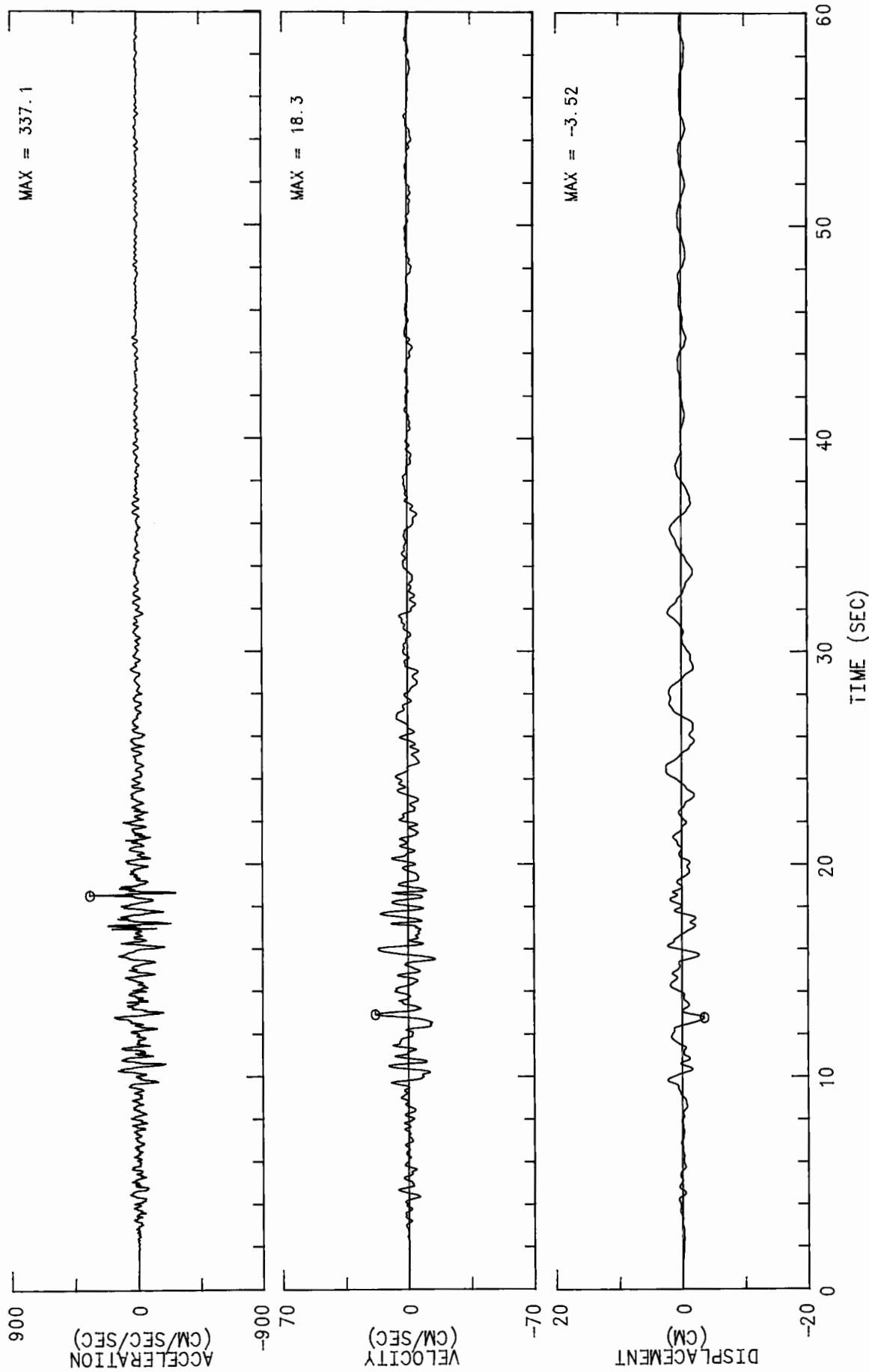
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 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 8): TRAN (HINGE NEAR BENT 3, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10--.20 TO 46.0-50.0 HZ. 23631-E0776-92180.09 082793.1913-QB92A776

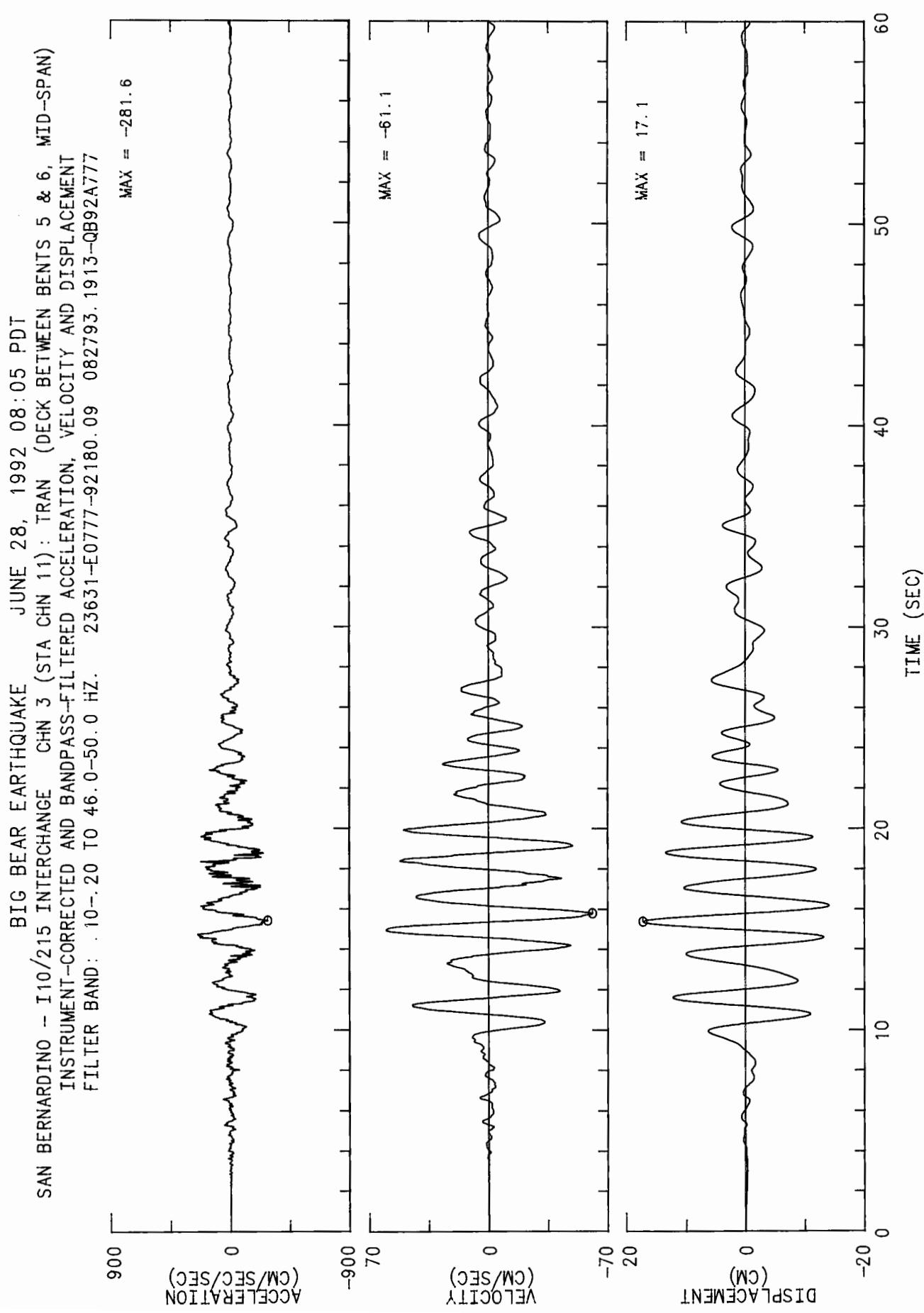


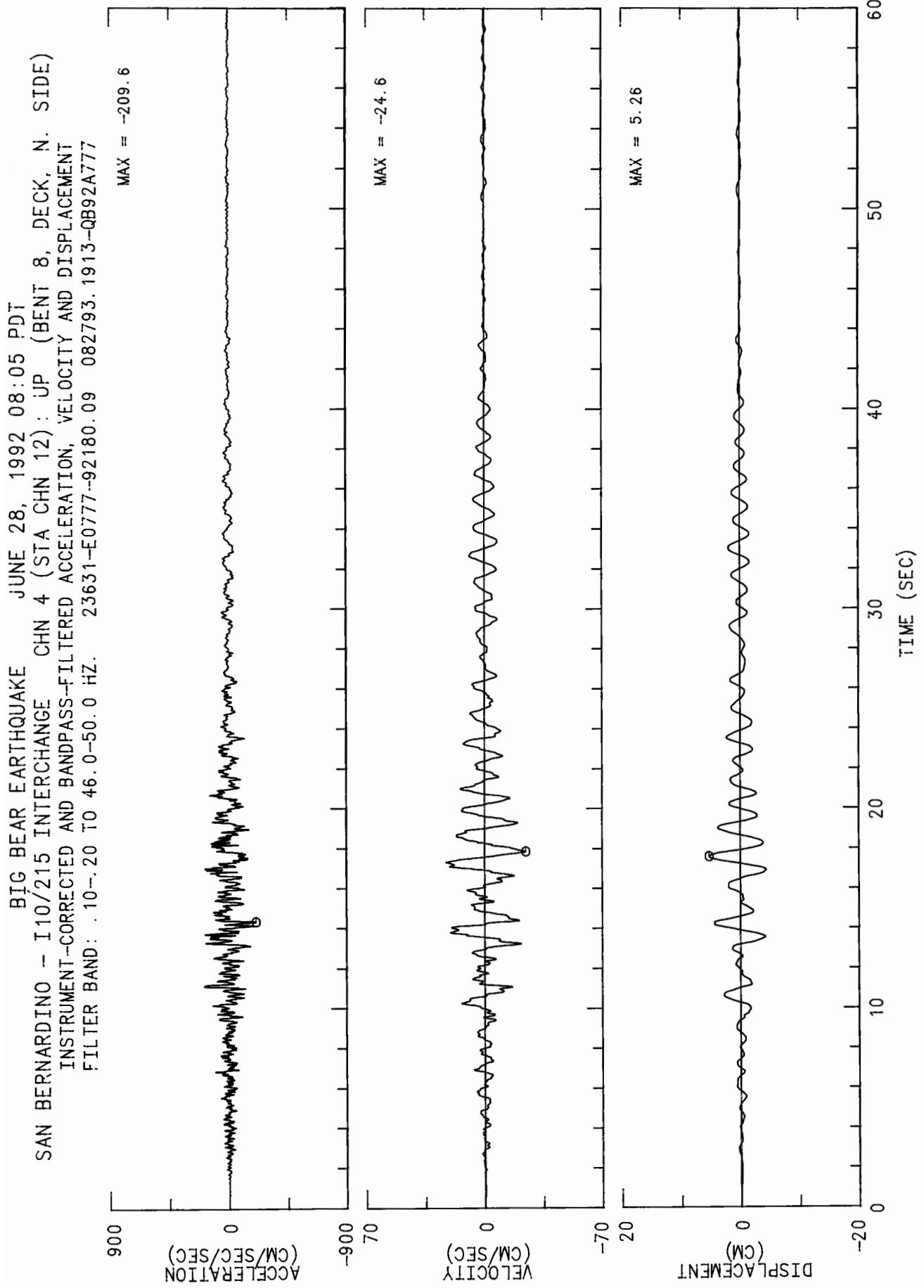
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - 110/215 INTERCHANGE      CHN 1 (STA CHN 9) : UP (BENT 7, DECK)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
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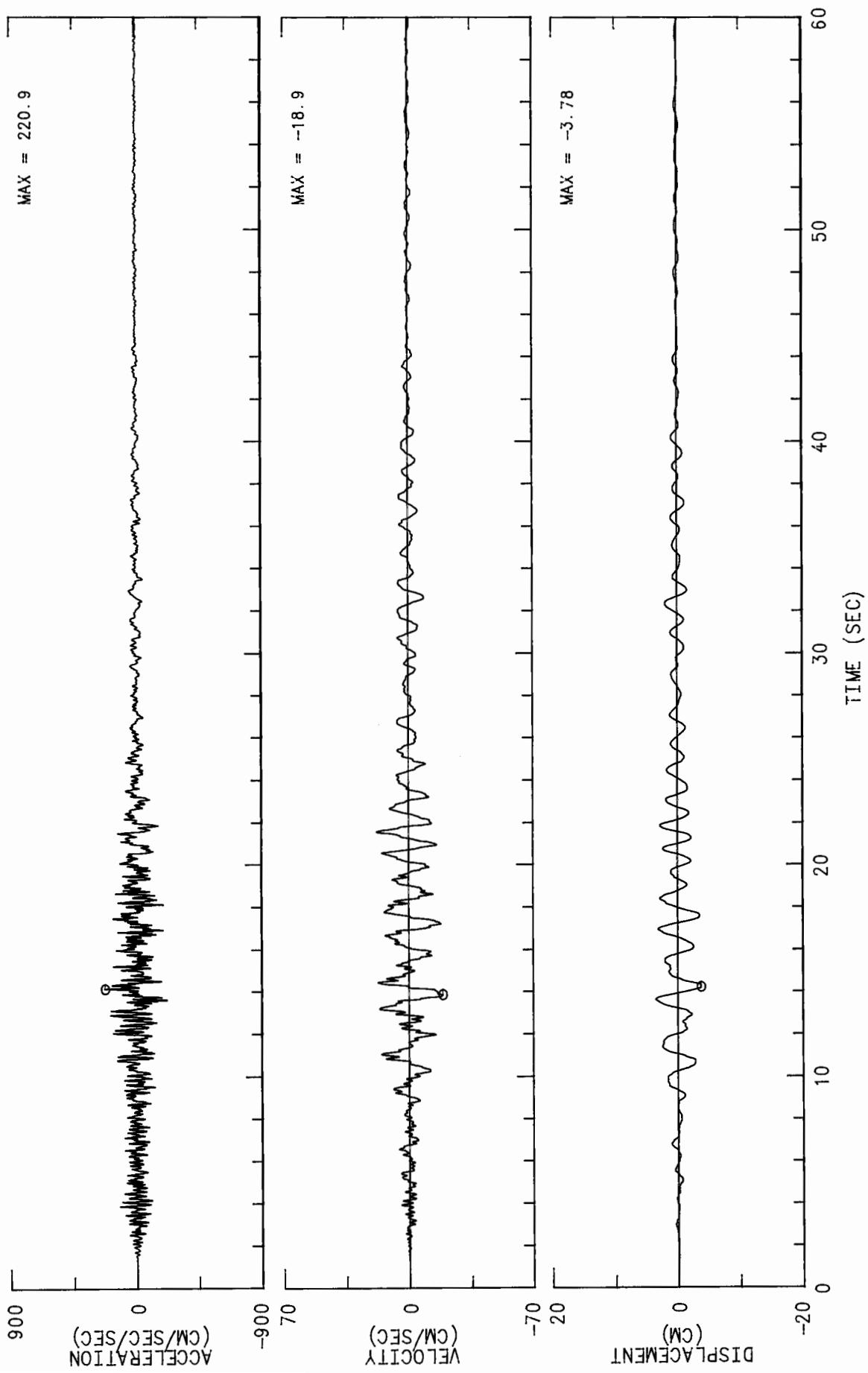
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - 110/215 INTERCHANGE CHN 2 (STA CHN 10): LONG (HINGE NEAR BENT 3, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0777-92180.09 082793.1913-QB92A77

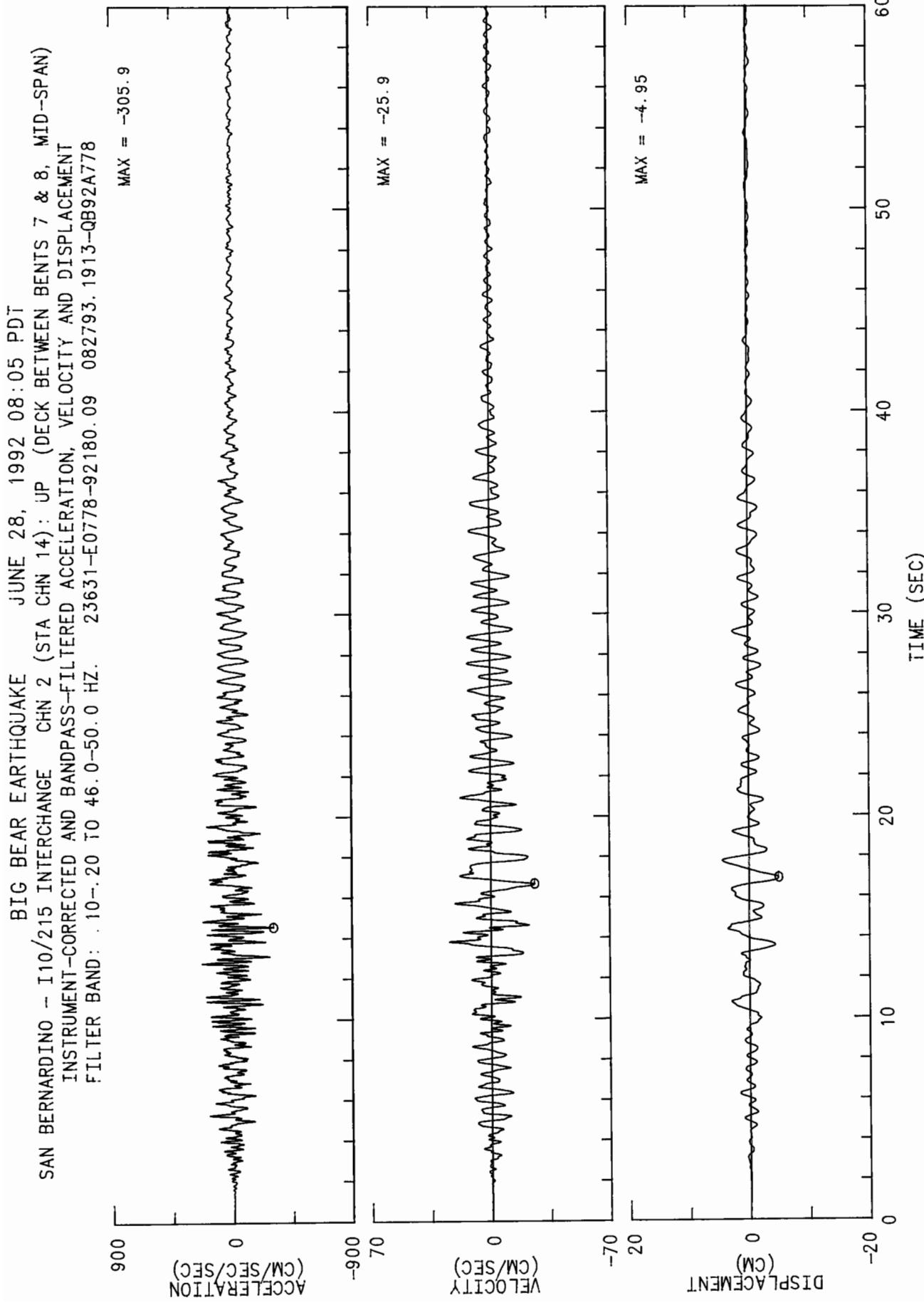




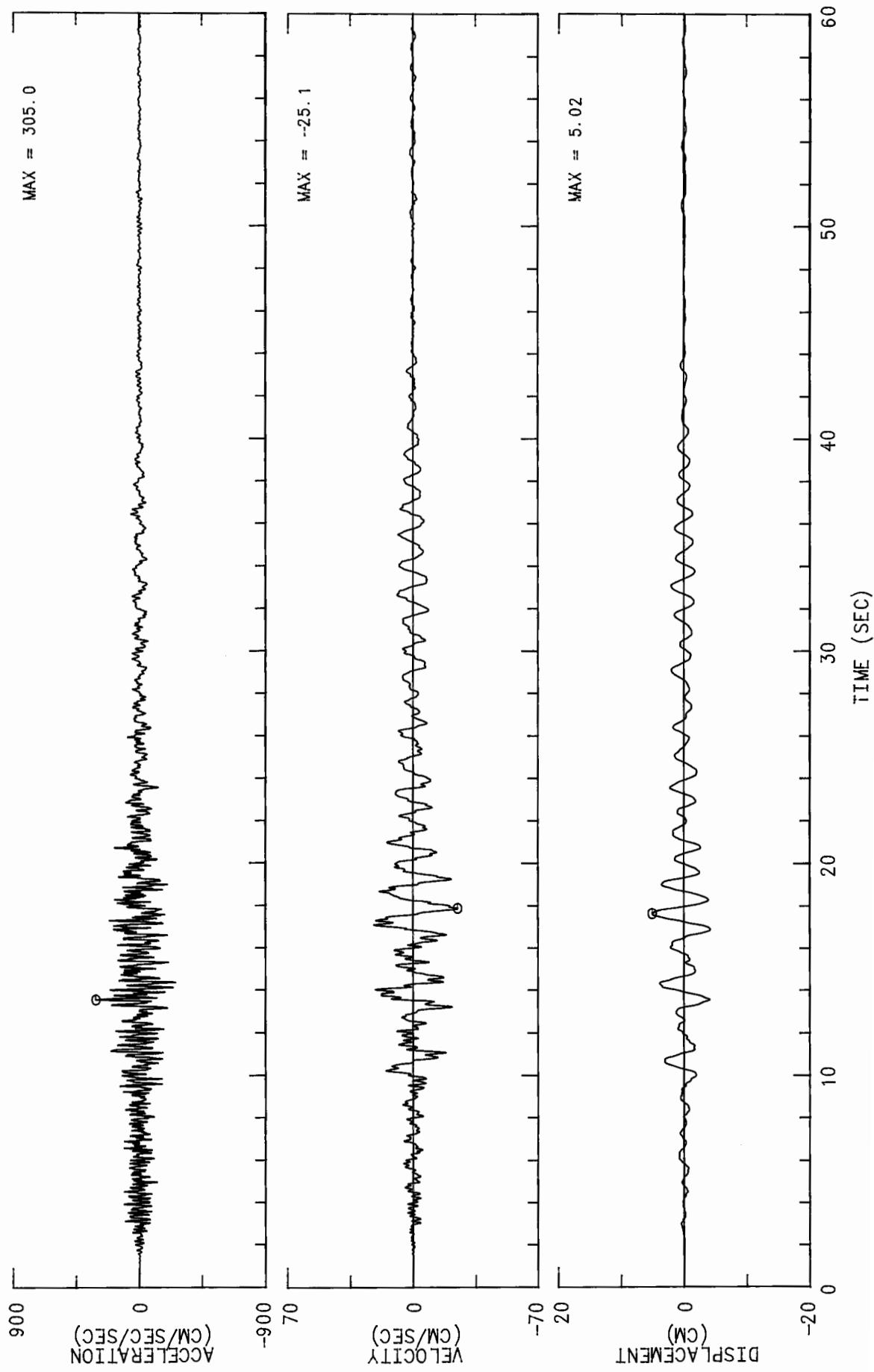


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 13) : UP (BENT 8, DECK, S. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0778-92180.09 082793.1913-QB92A778

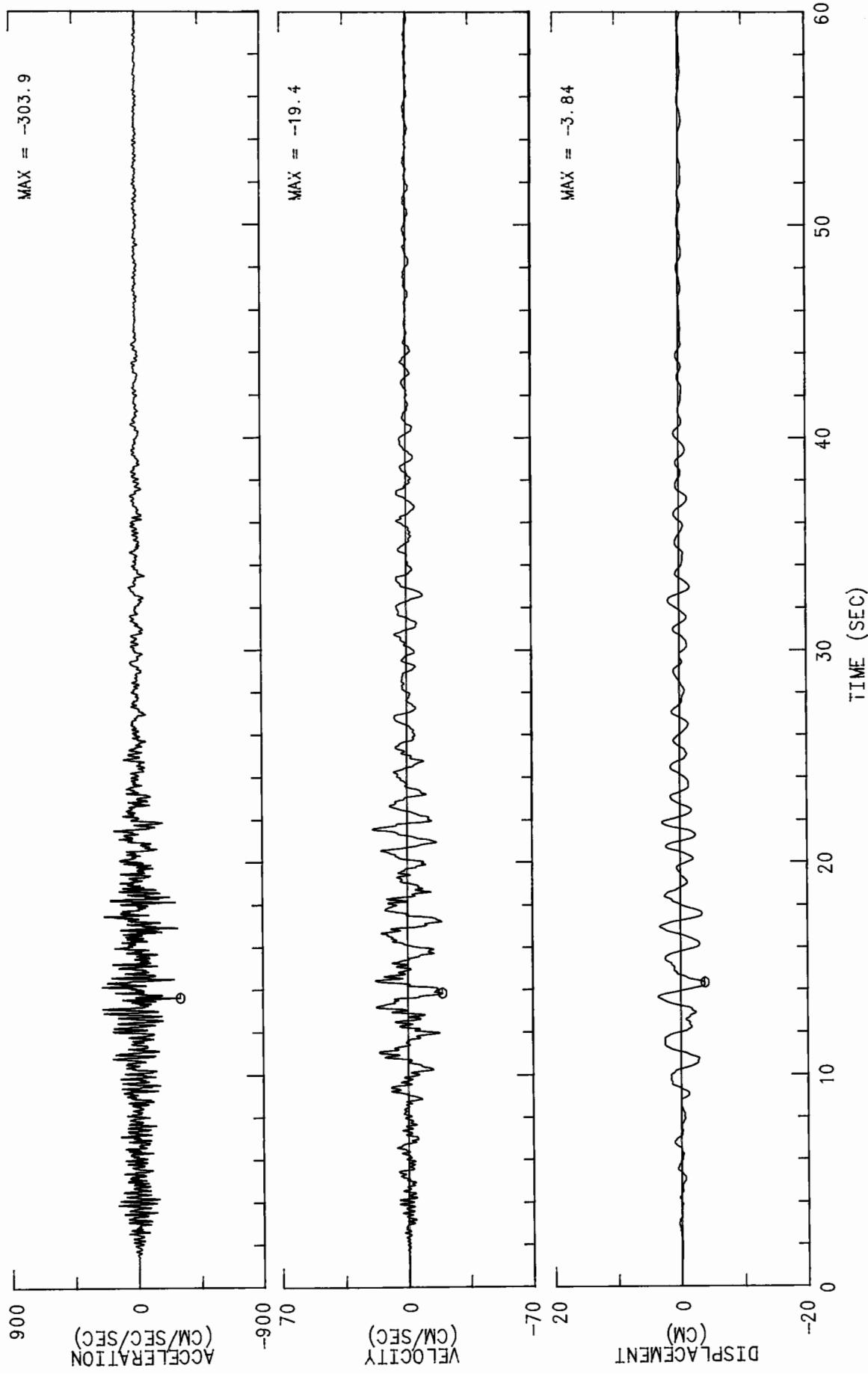




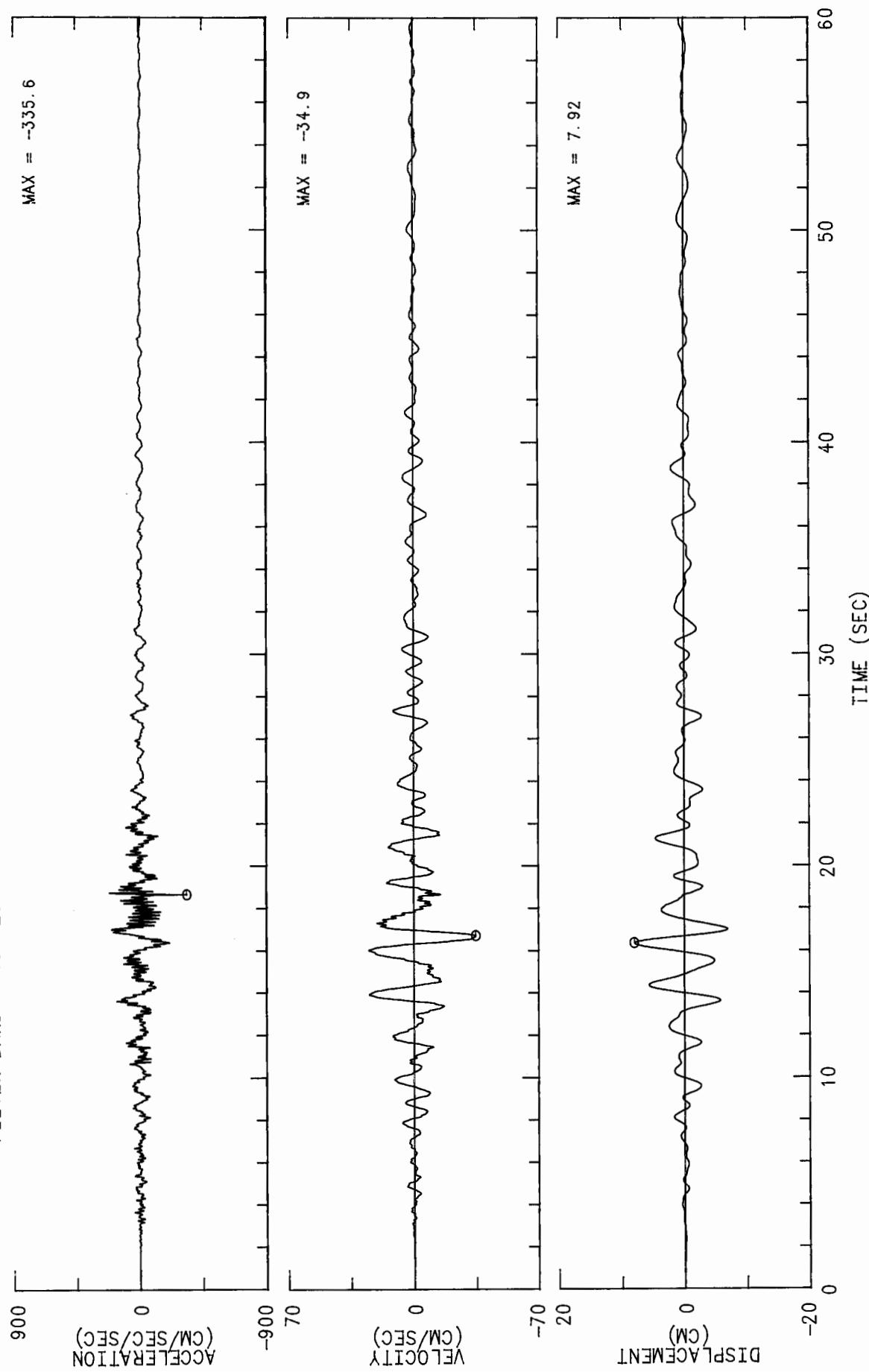
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 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 15): UP (HINGE NEAR BENT 8, N. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0778-92180.09 082793.1913-QB92A778



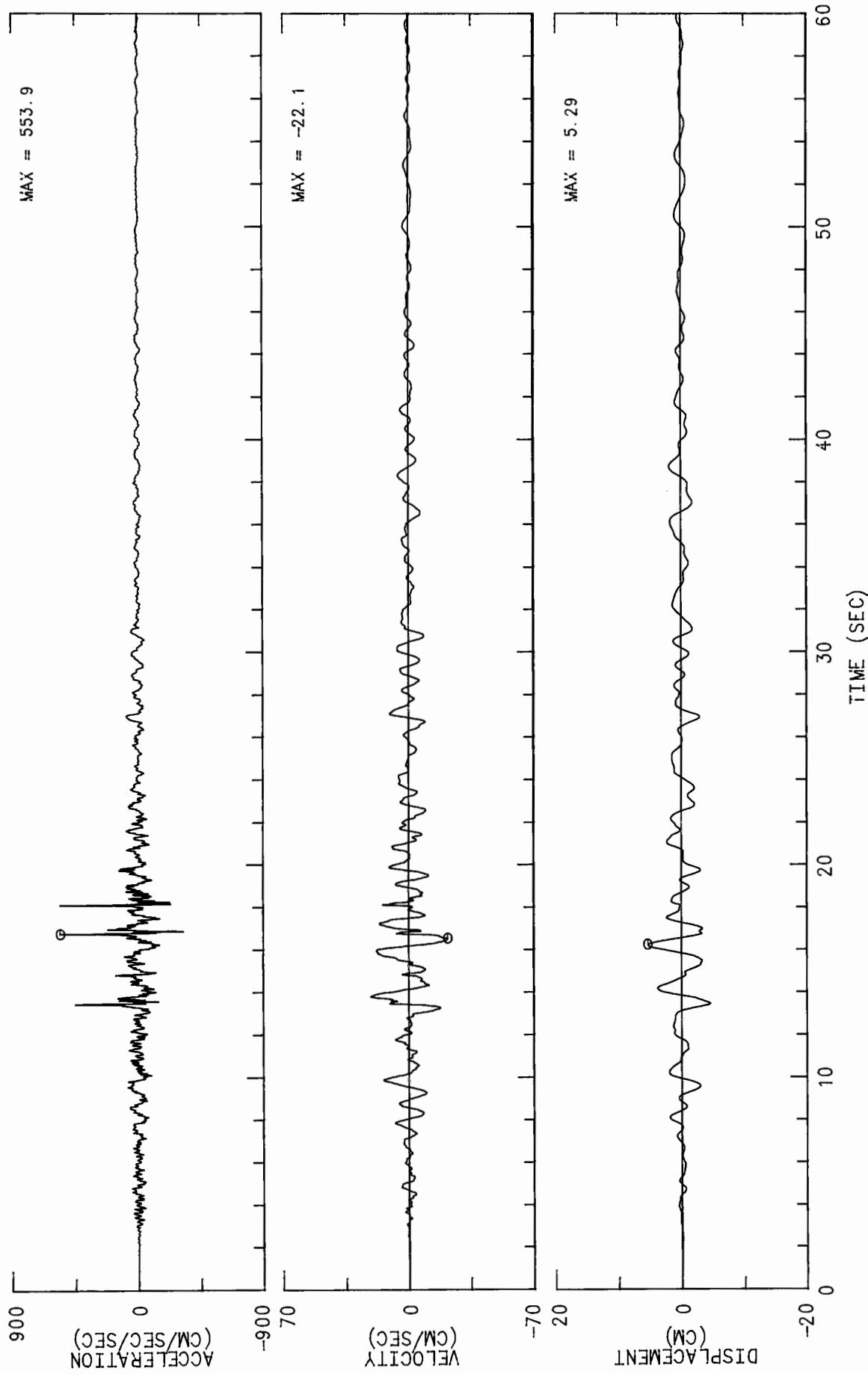
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - 110/215 INTERCHANGE CHN 4 (STA CHN 16): UP (HINGE NEAR BENT 8, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0778-92180.09 082793.1913-QB92A778



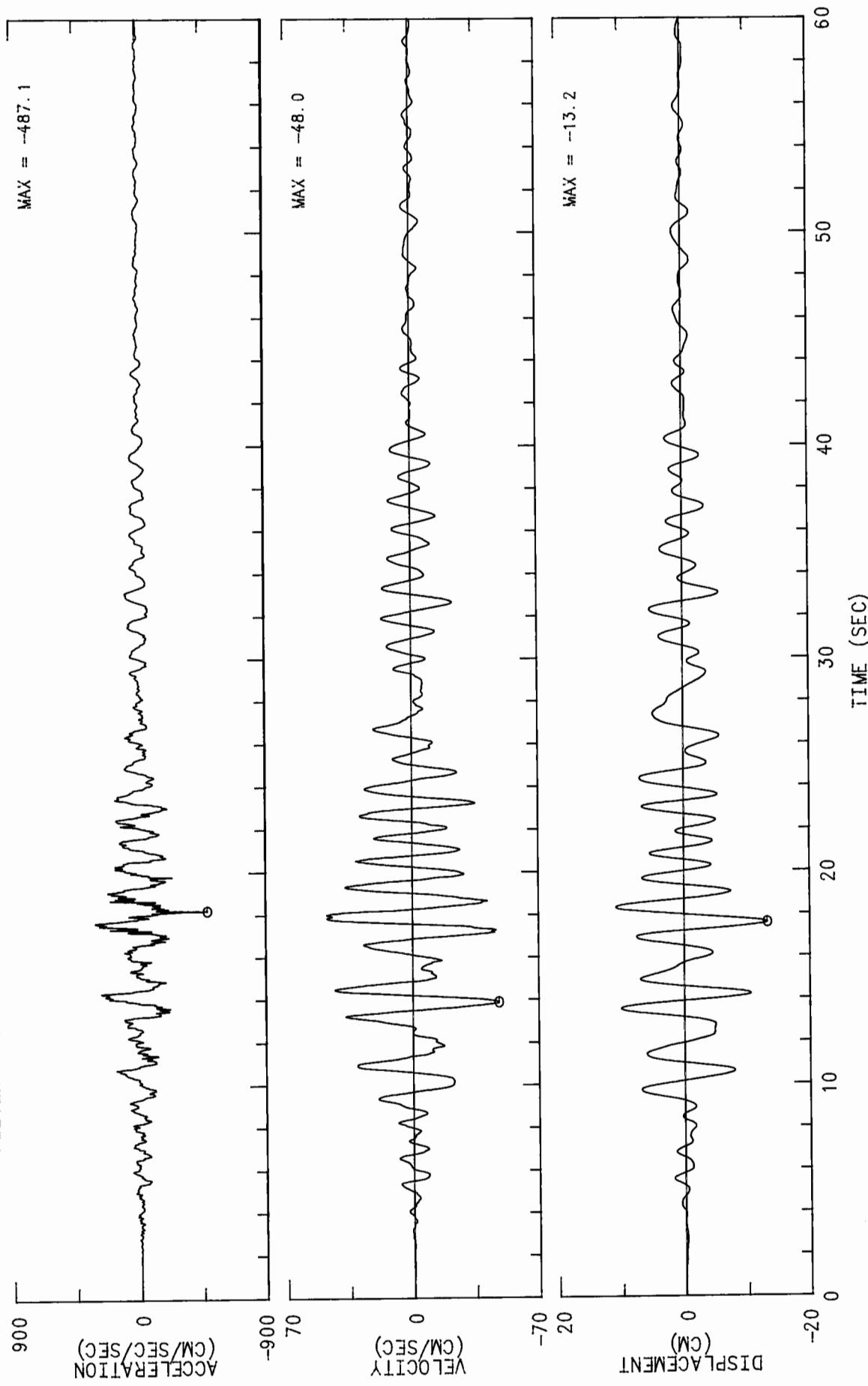
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 17) : LONG (HINGE NEAR BENT 8, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND : .10--.20 TO 46.0-50.0 HZ. 23631-E0779-92180.09 082793.1913-QB92A779



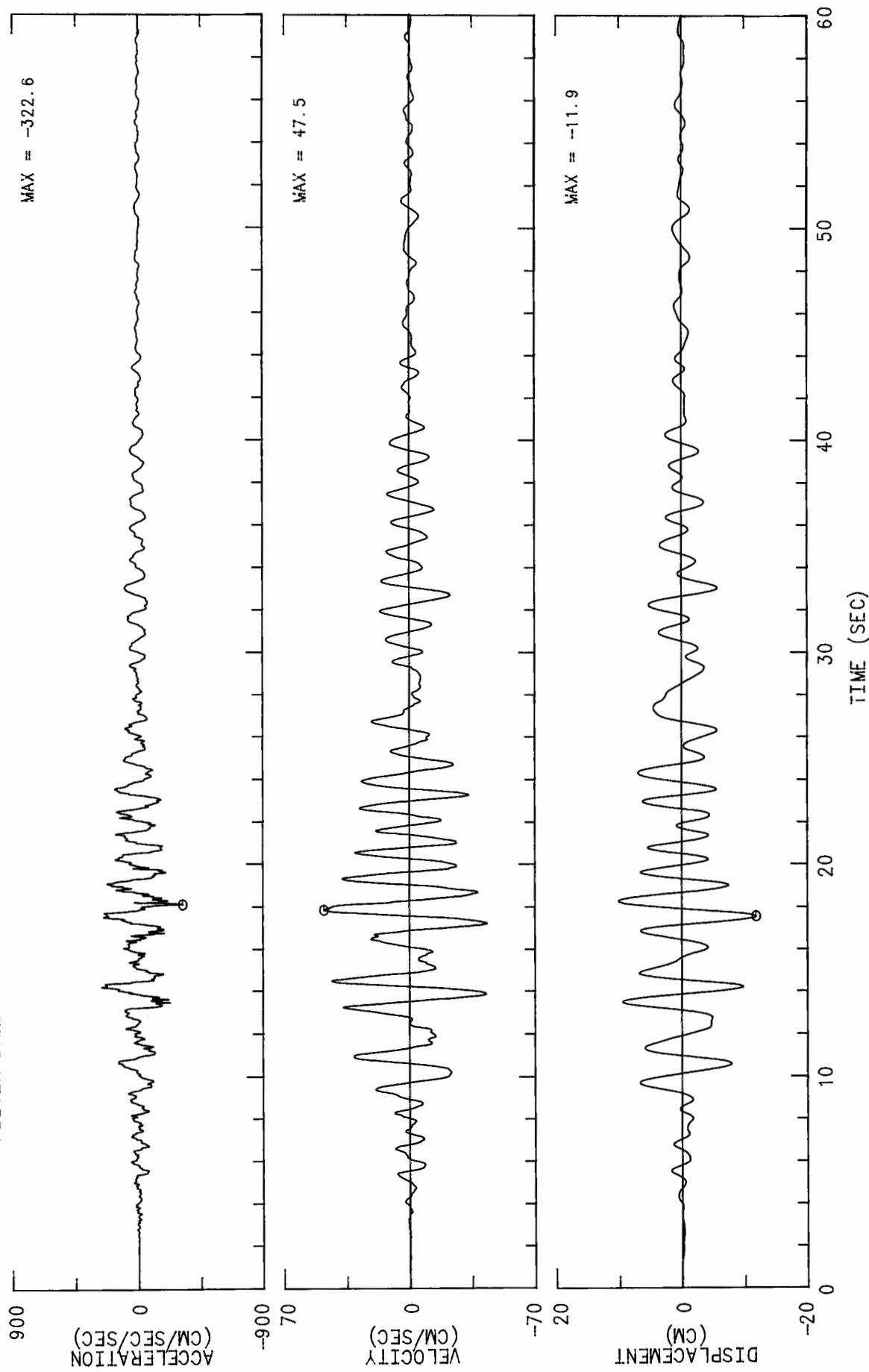
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 18) : LONG (HINGE NEAR BENT 8, E. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND : .10-.20 TO 46.0-50.0 HZ. 23631-E0779-92180.09 082793.1913-QB92A779



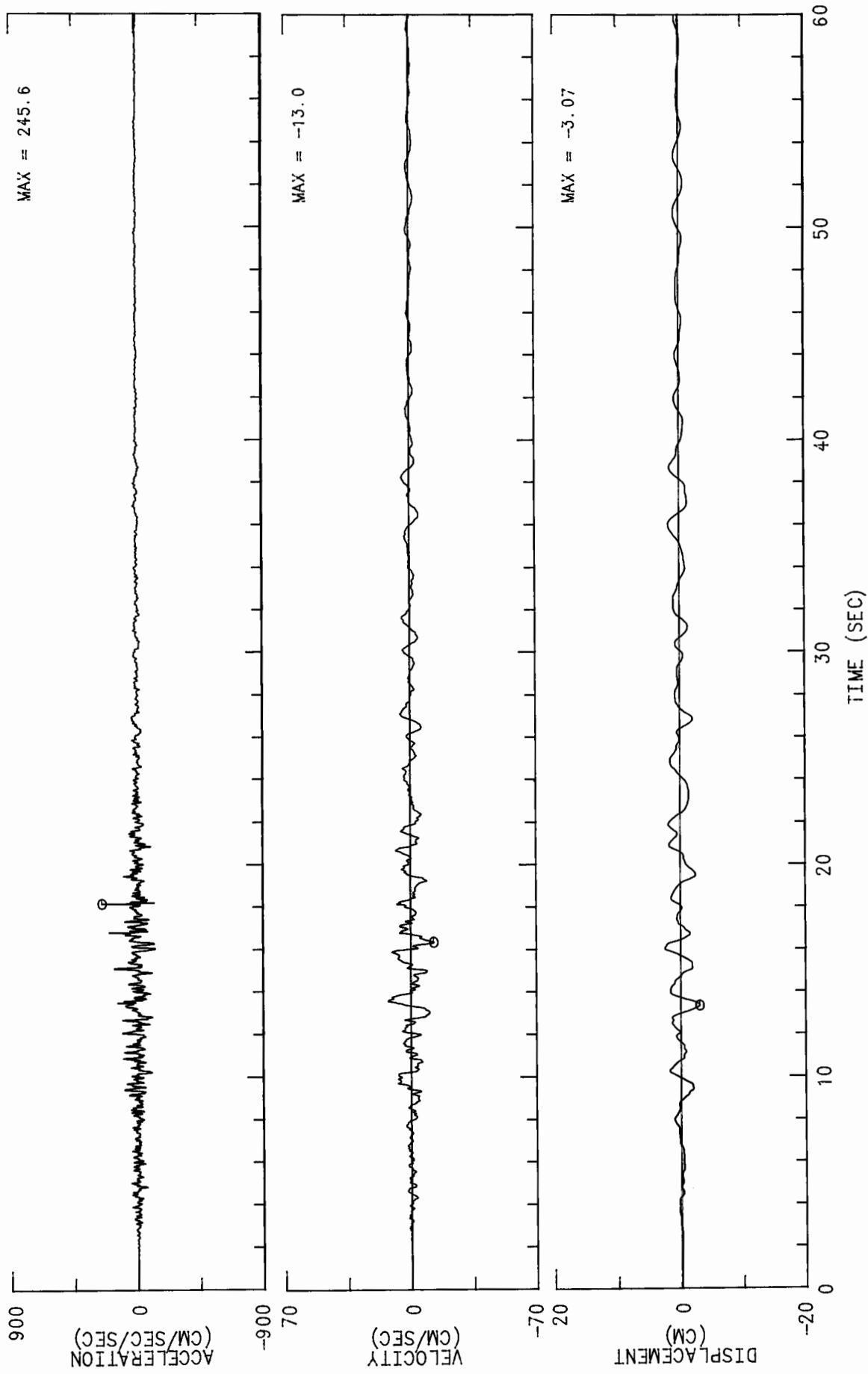
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 19): TRAN (HINGE NEAR BENT 8, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0779-92180.09 082793.1913-QB92A779



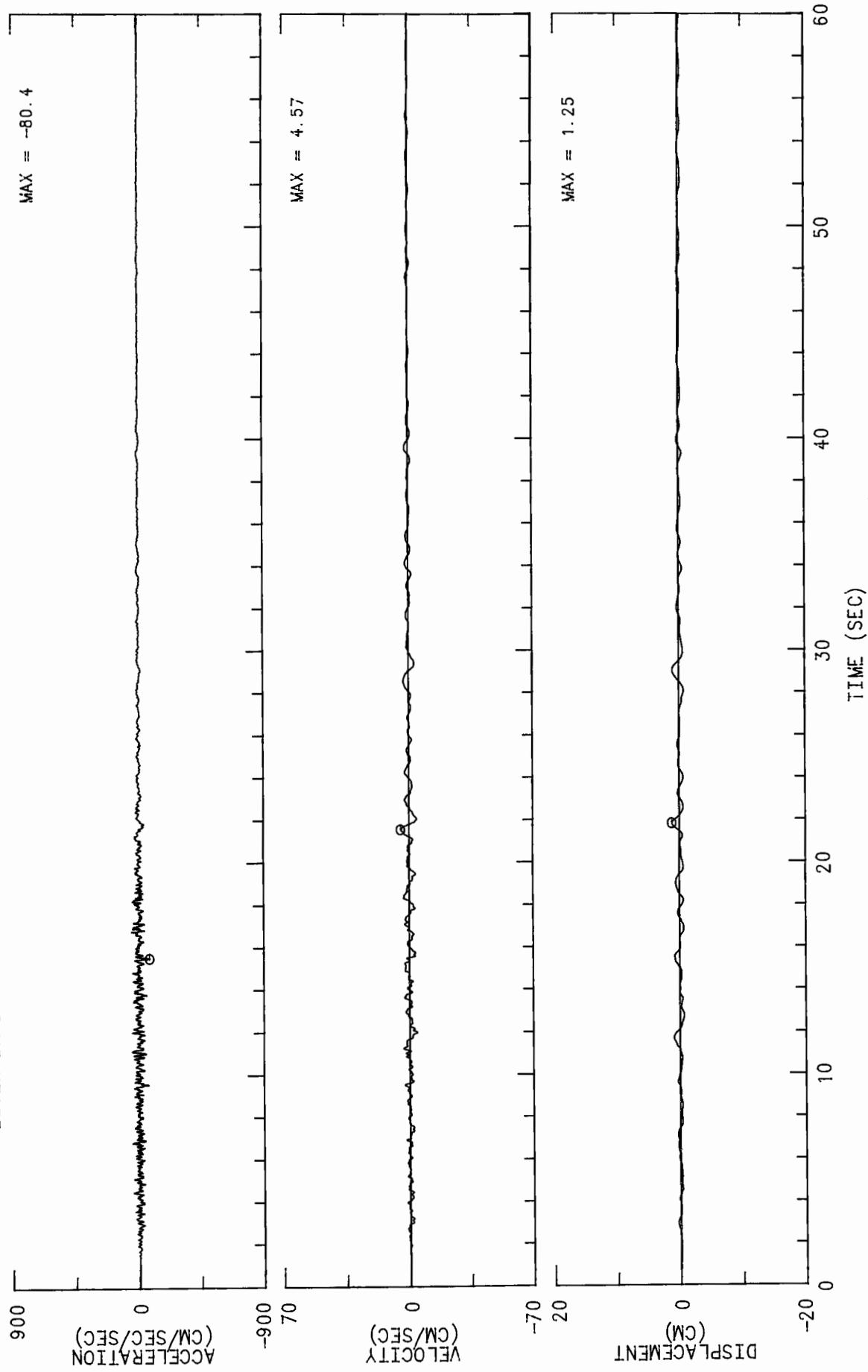
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 20): TRAN (HINGE NEAR BENT 8, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0779-92180.09 082793.1913-QB92A779



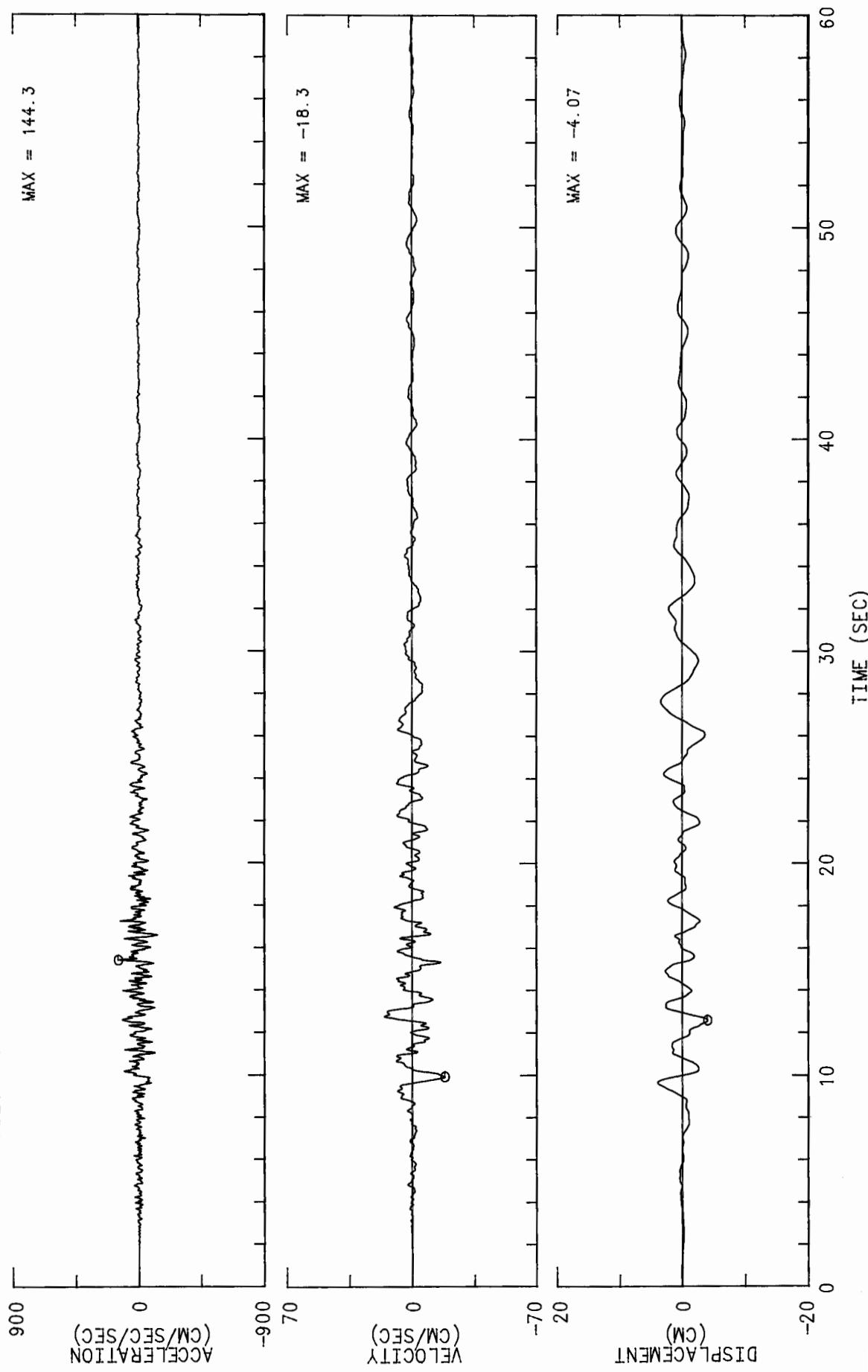
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - 110/215 INTERCHANGE CHN 2 (STA CHN 22) : LONG (BENT 8, FOOTING, S. SIDE)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0780-92180.09 082793.1913-QB92A780



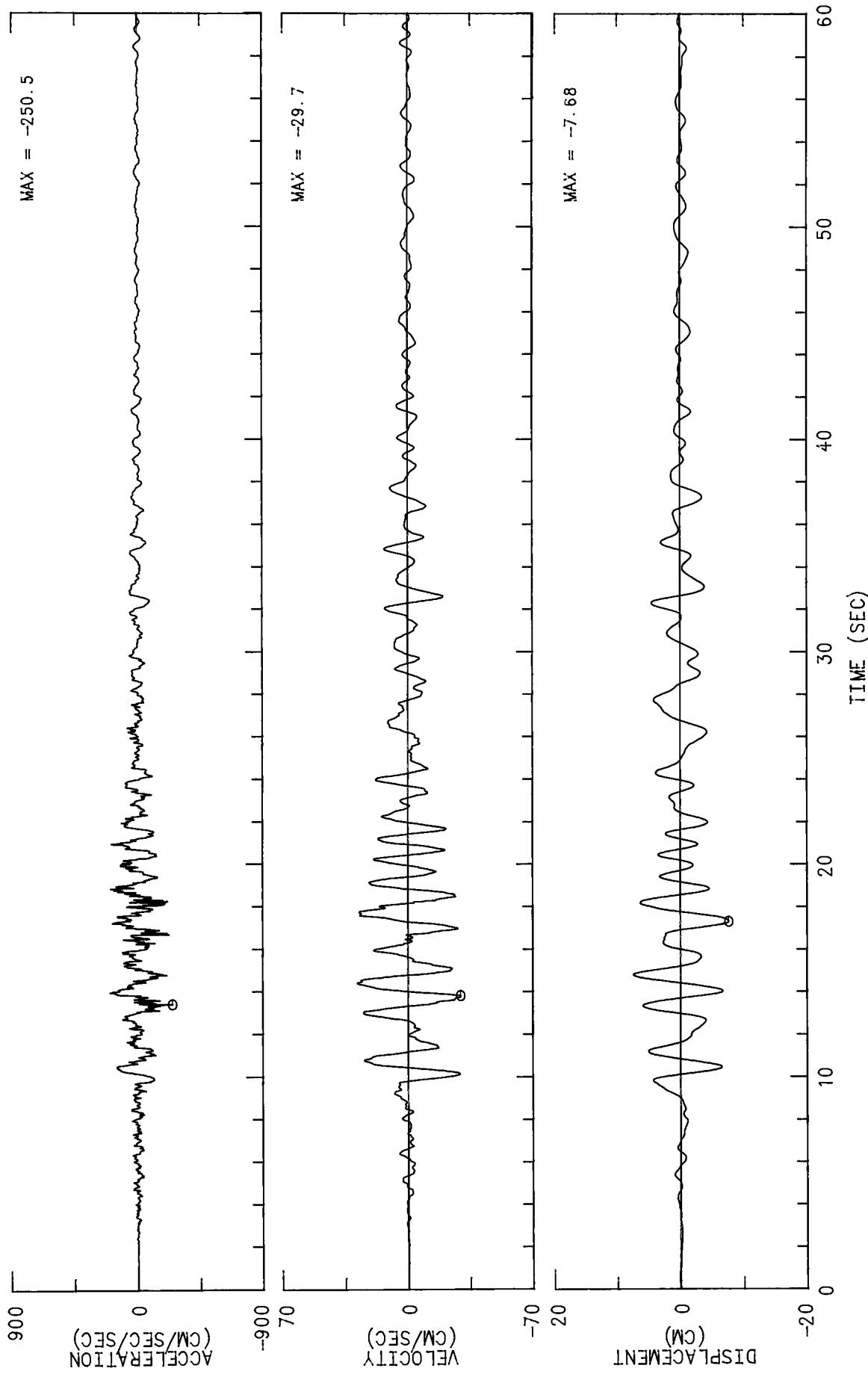
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 23) : UP (BENT 8, FOOTING, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND : .10-.20 TO 46.0-50.0 HZ. 23631-E0780-92180.09 082793.1913-QB92A780



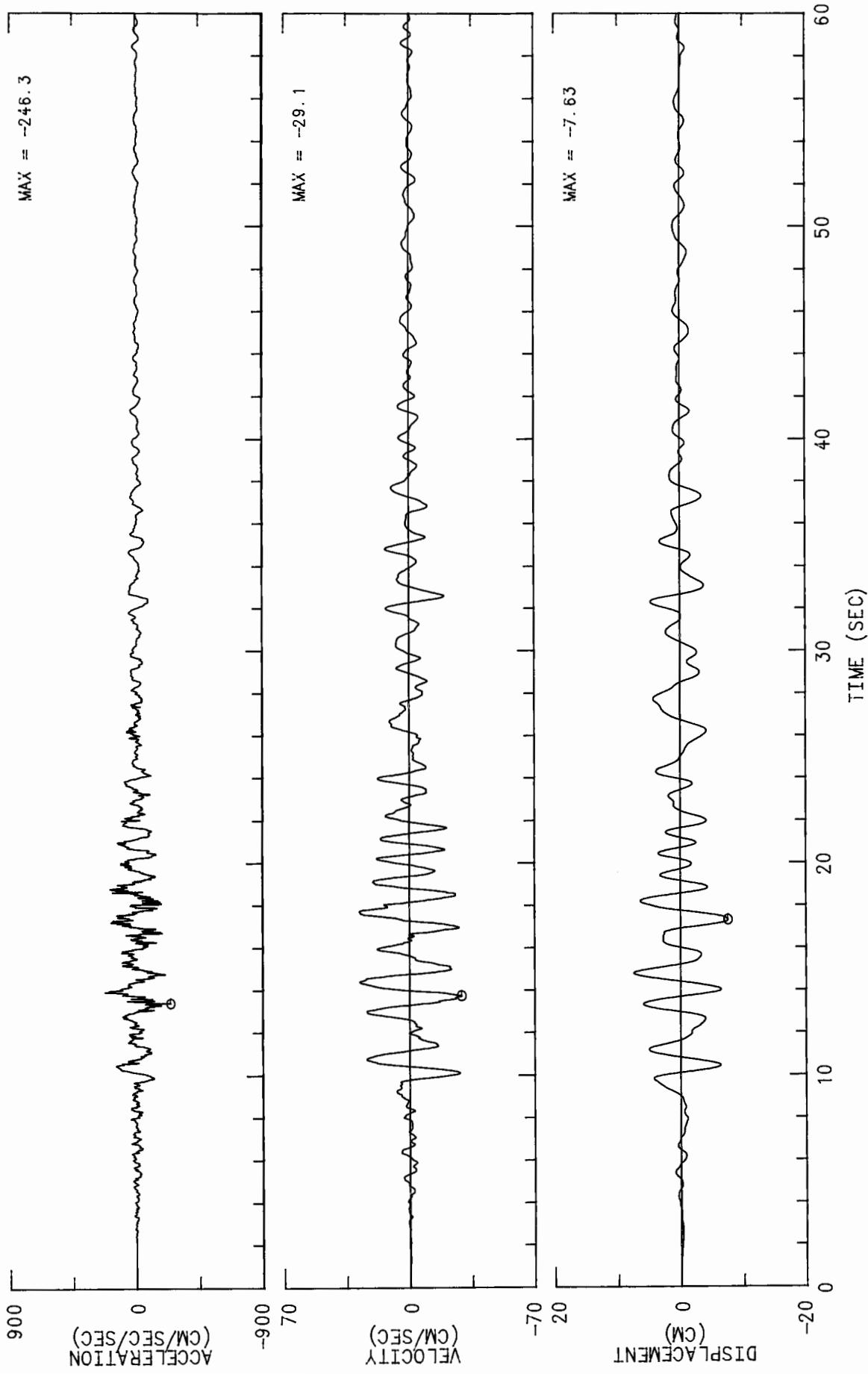
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 24): TRAN (BENT 8, FOOTING, S. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0780-92180.09 082793.1913-QB92A780



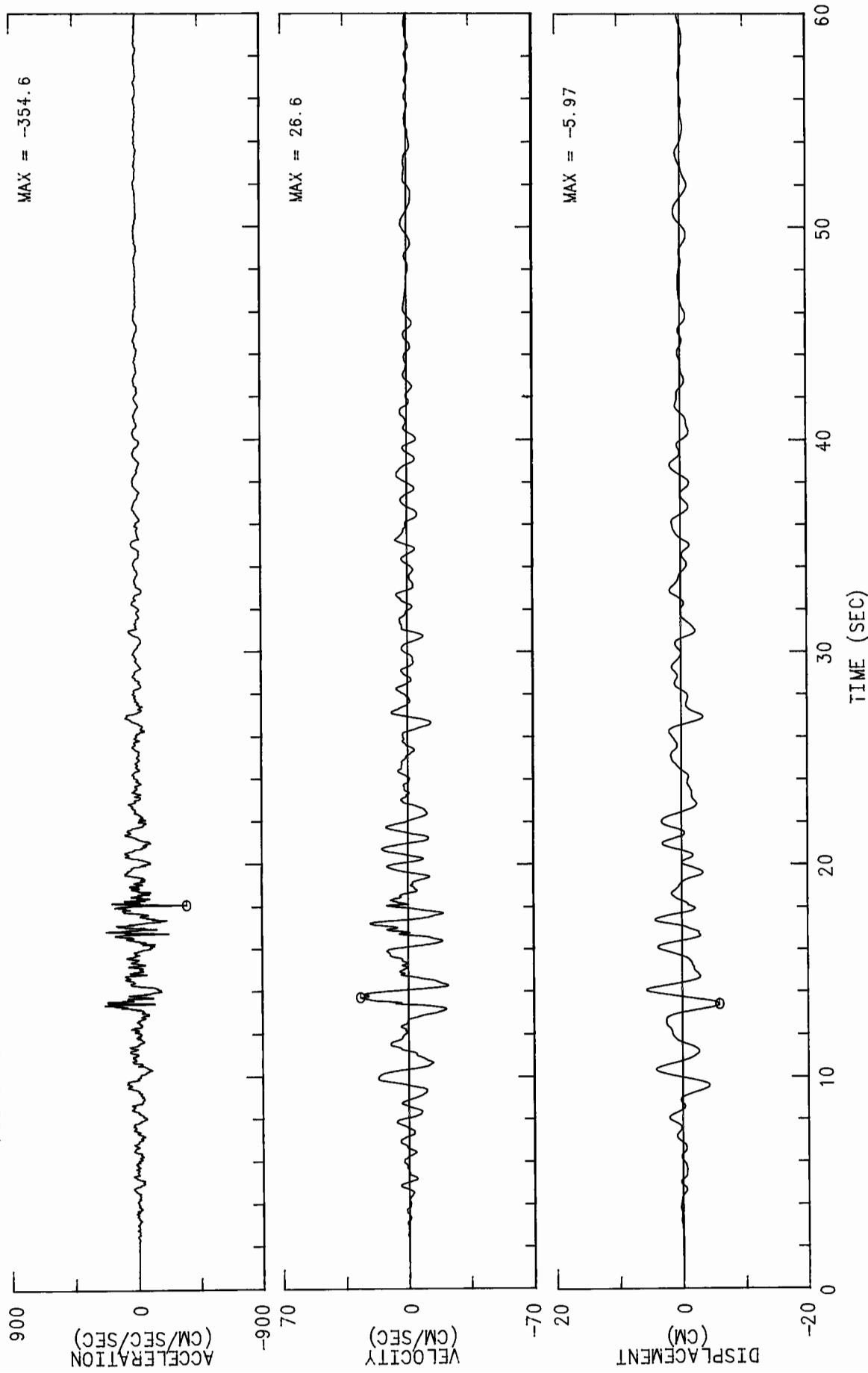
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 25): TRAN (HINGE NEAR BENT 10, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0781-92180.09 082793.1913-QB92A781



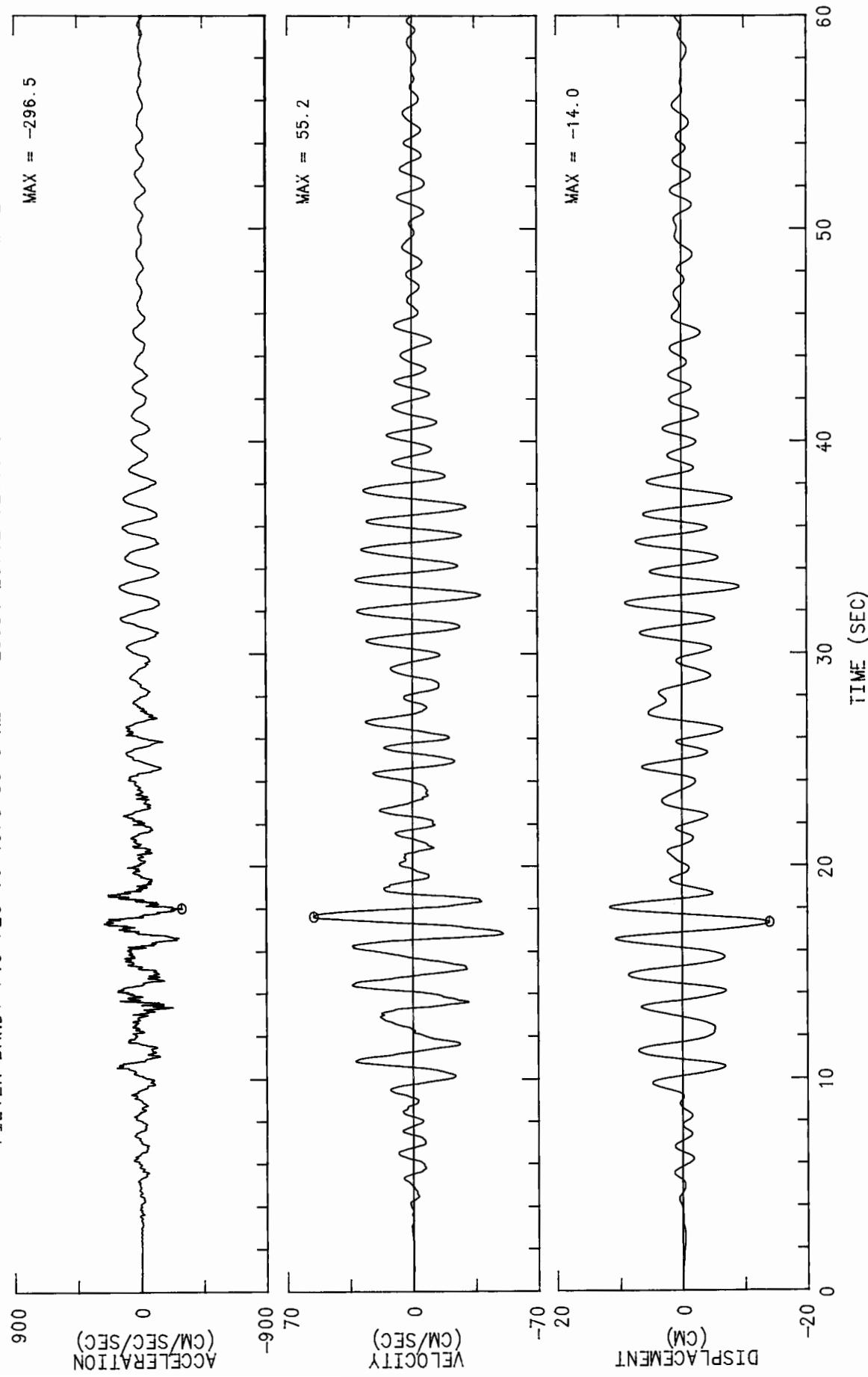
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - T10/215 INTERCHANGE CHN 2 (STA CHN 26): TRAN (HINGE NEAR BENT 10, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0781-92180.09 082793.1913-QB92A781



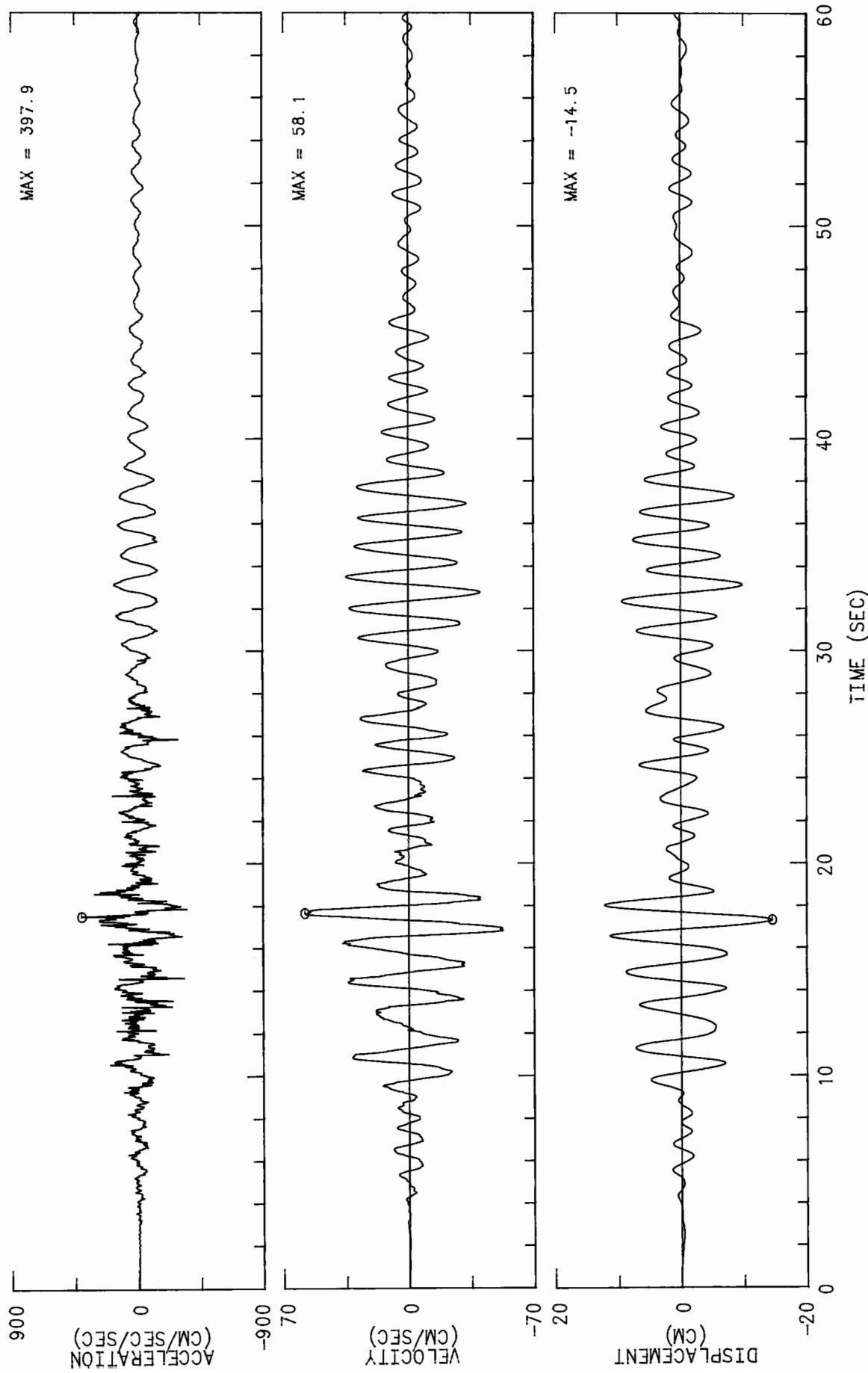
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 28): LONG (HINGE NEAR BENT 11, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND : .10-.20 TO 46.0-50.0 HZ. 23631-E0781-92180.09 082793.1913-QB92A781



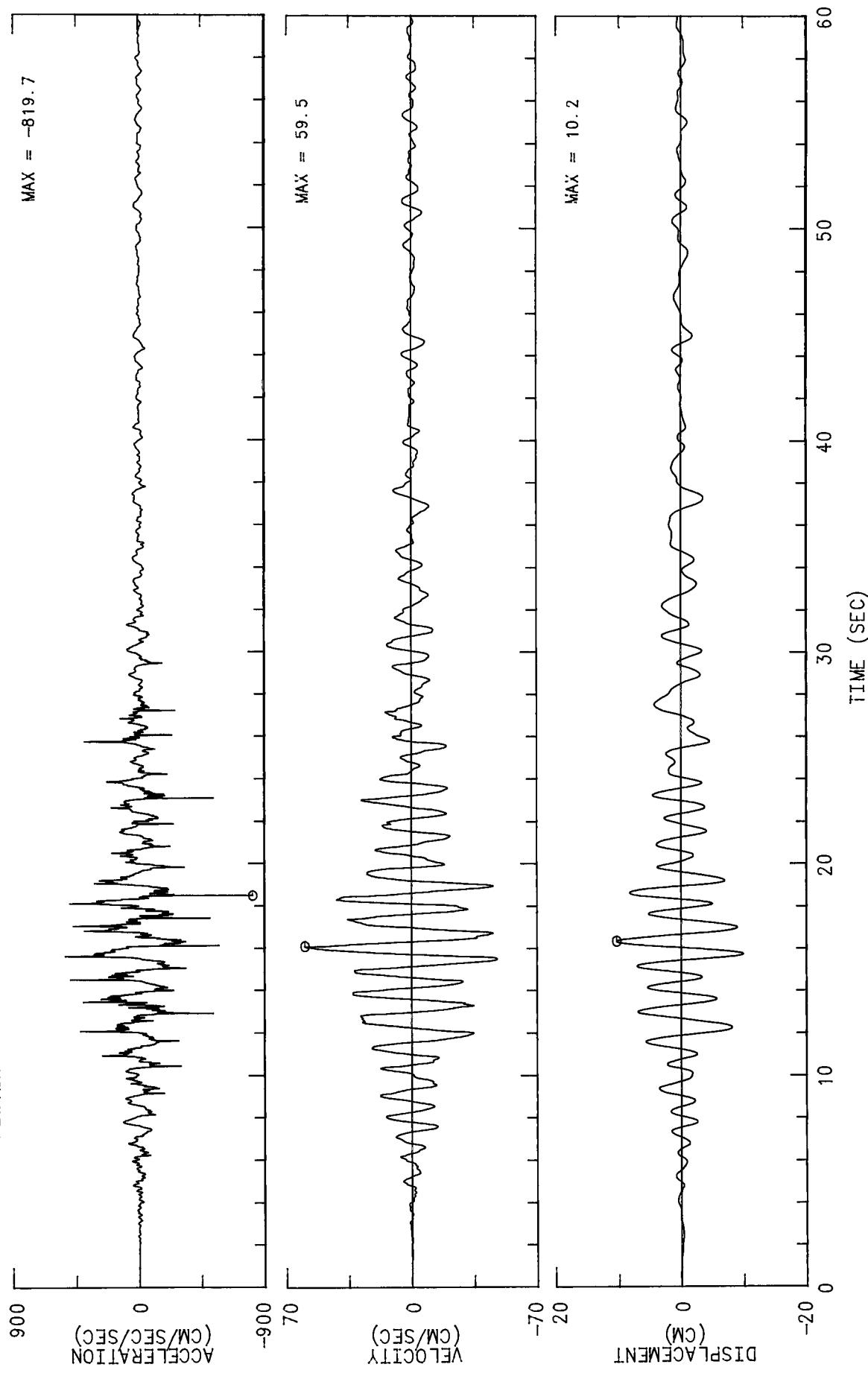
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 29): TRAN (HINGE NEAR BENT 11, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0782-92180.09 082793.1913-QB92A782



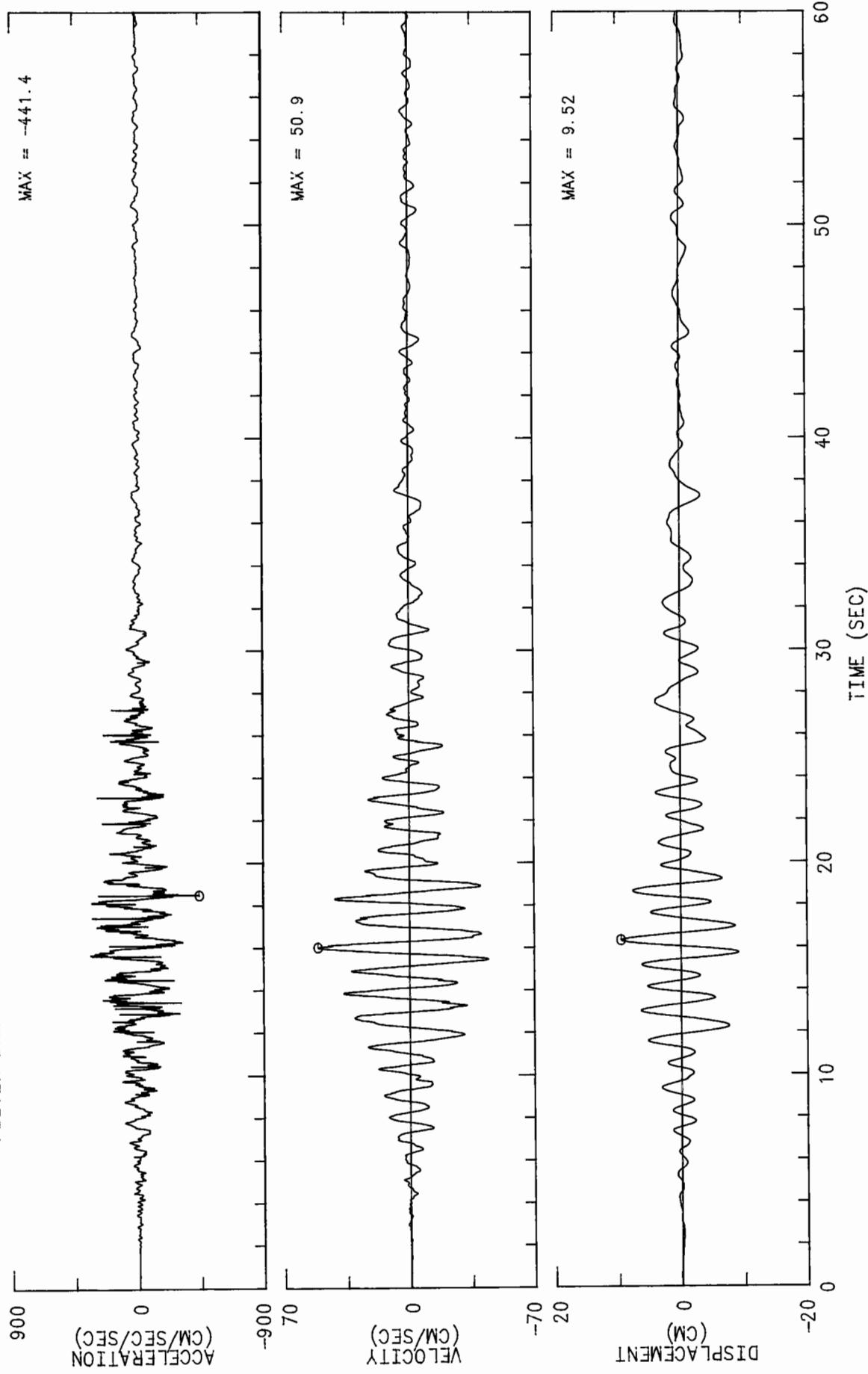
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 2 (STA CHN 30): TRAN (HINGE NEAR BENT 11, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0782-92180.09 082793.1913-QB92A782



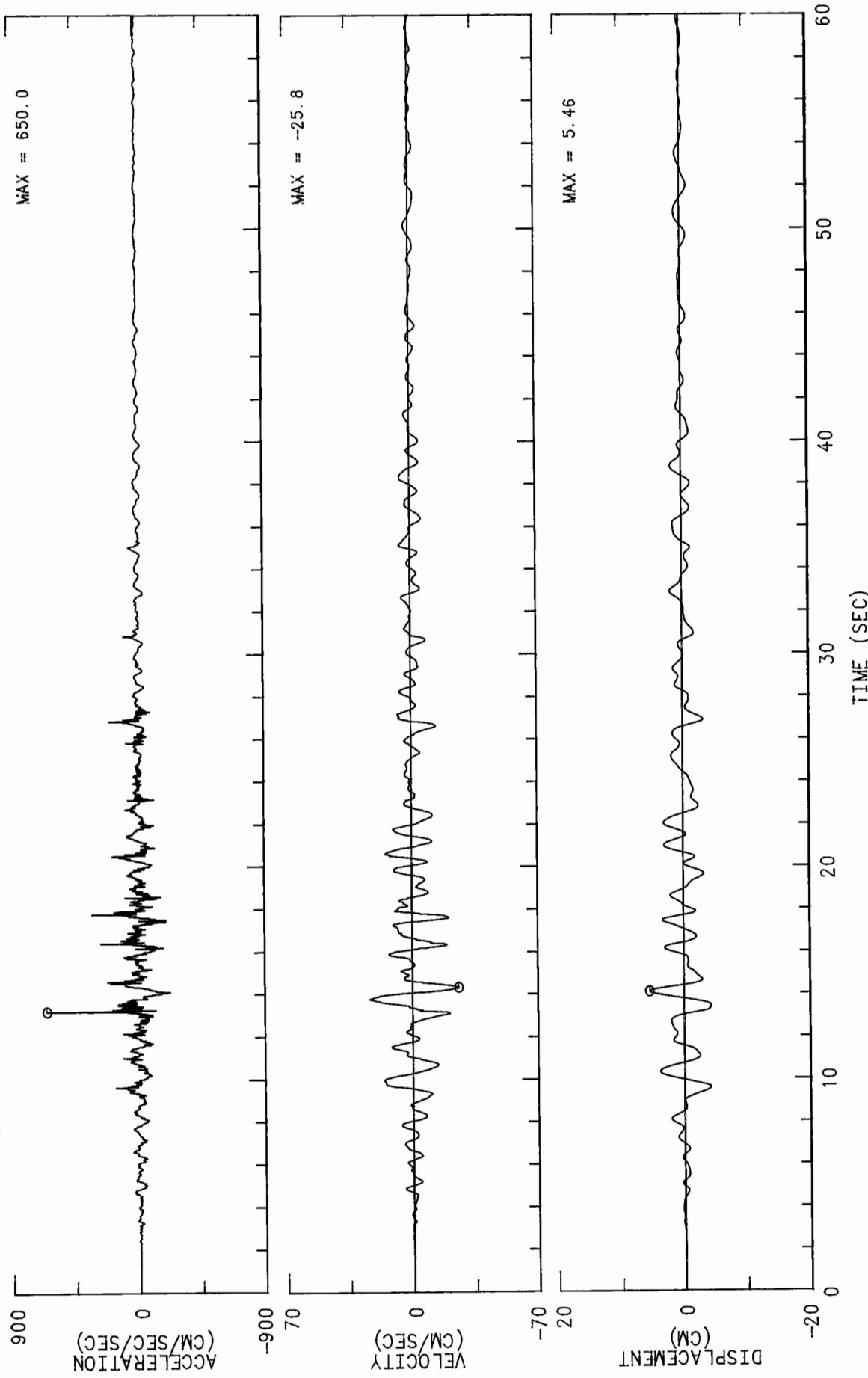
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 31) : TRAN (HINGE NEAR BENT 14, W. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0782-92180.09 082793.1913-QB92A782



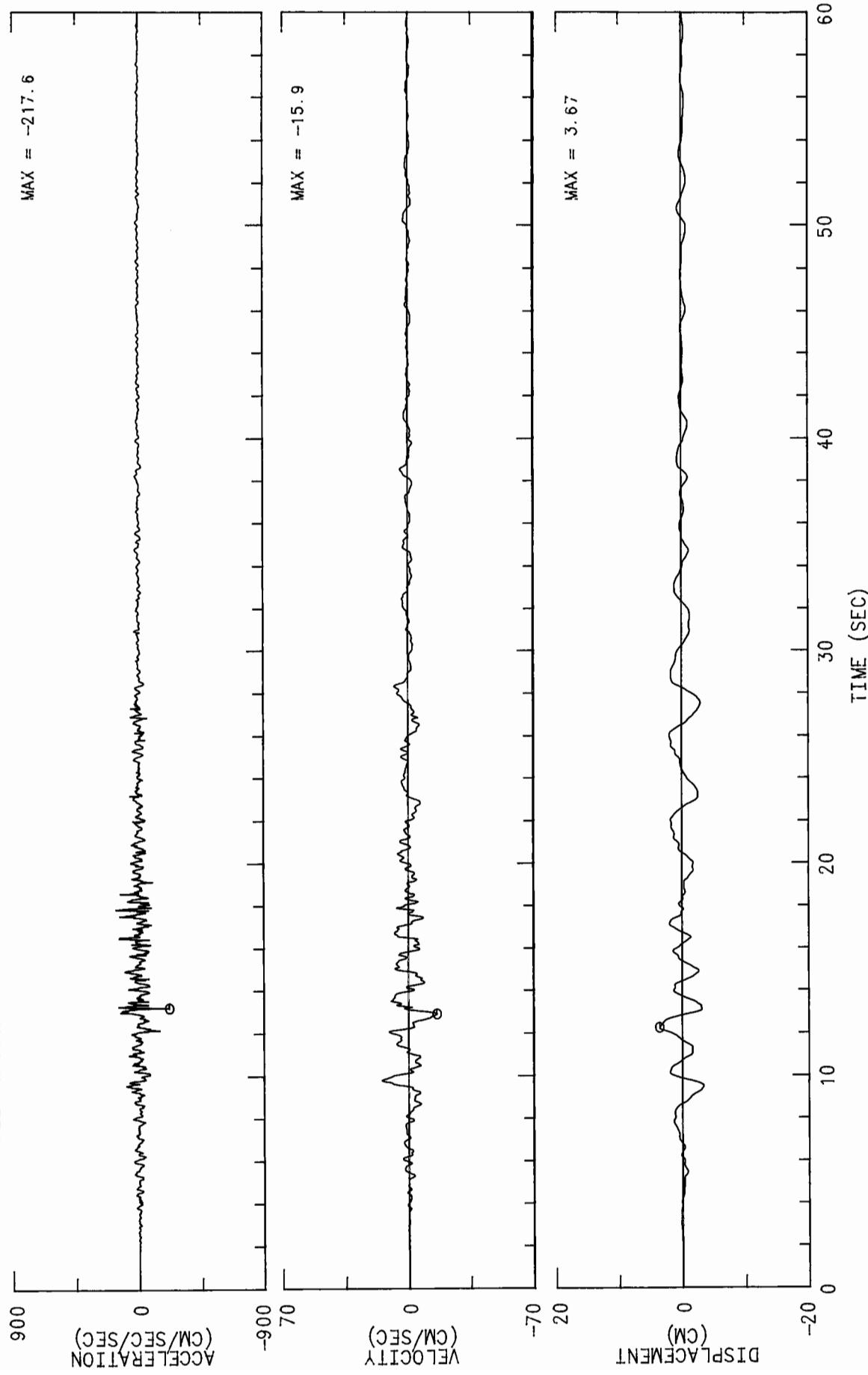
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 4 (STA CHN 32): TRAN (HINGE NEAR BENT 14, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0782-92180.09 082793.1913-QB92A782



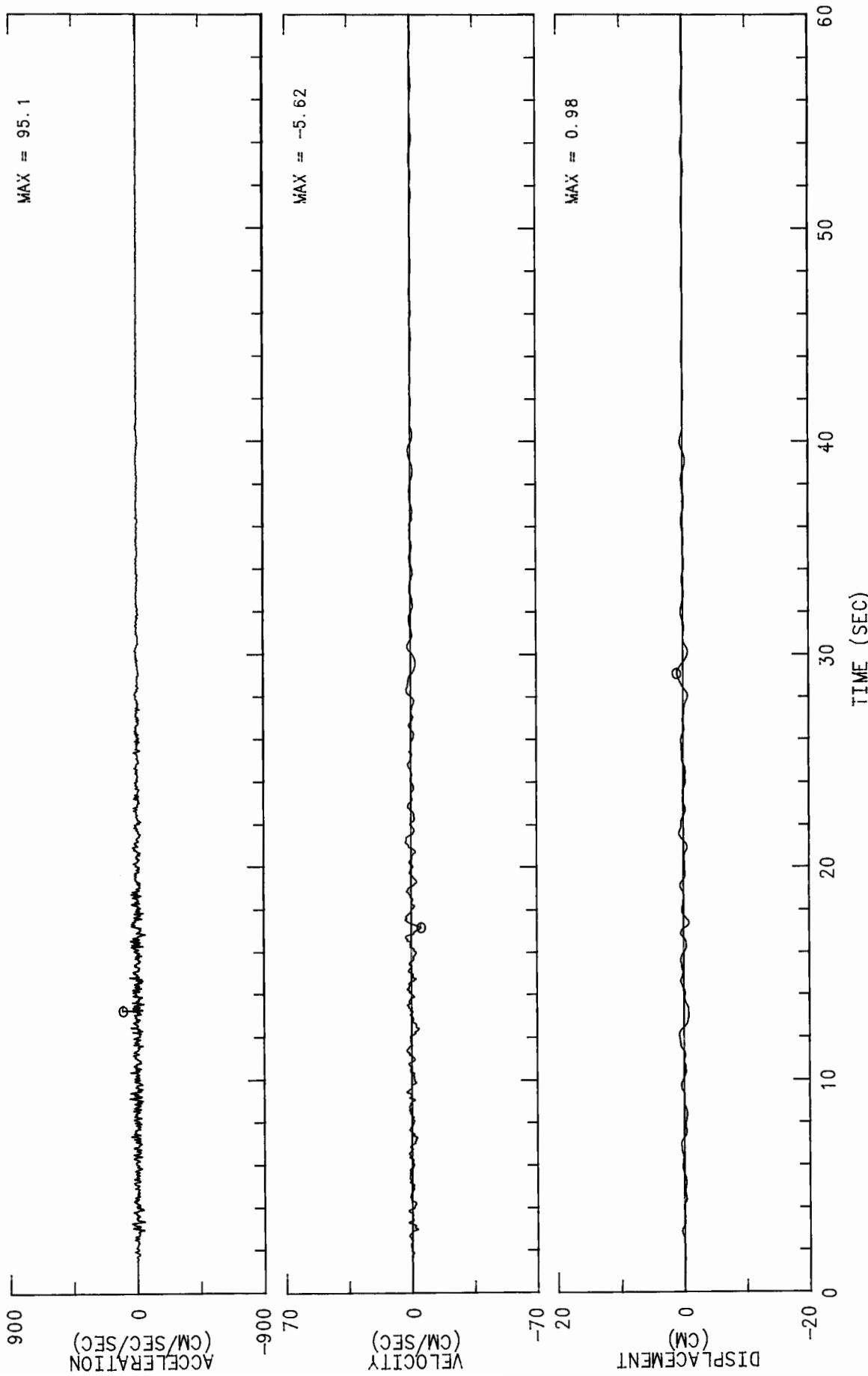
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE CHN 1 (STA CHN 33): LONG (HINGE NEAR BENT 11, E. SIDE)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0783-92180.09 082793.1913-QB92A783



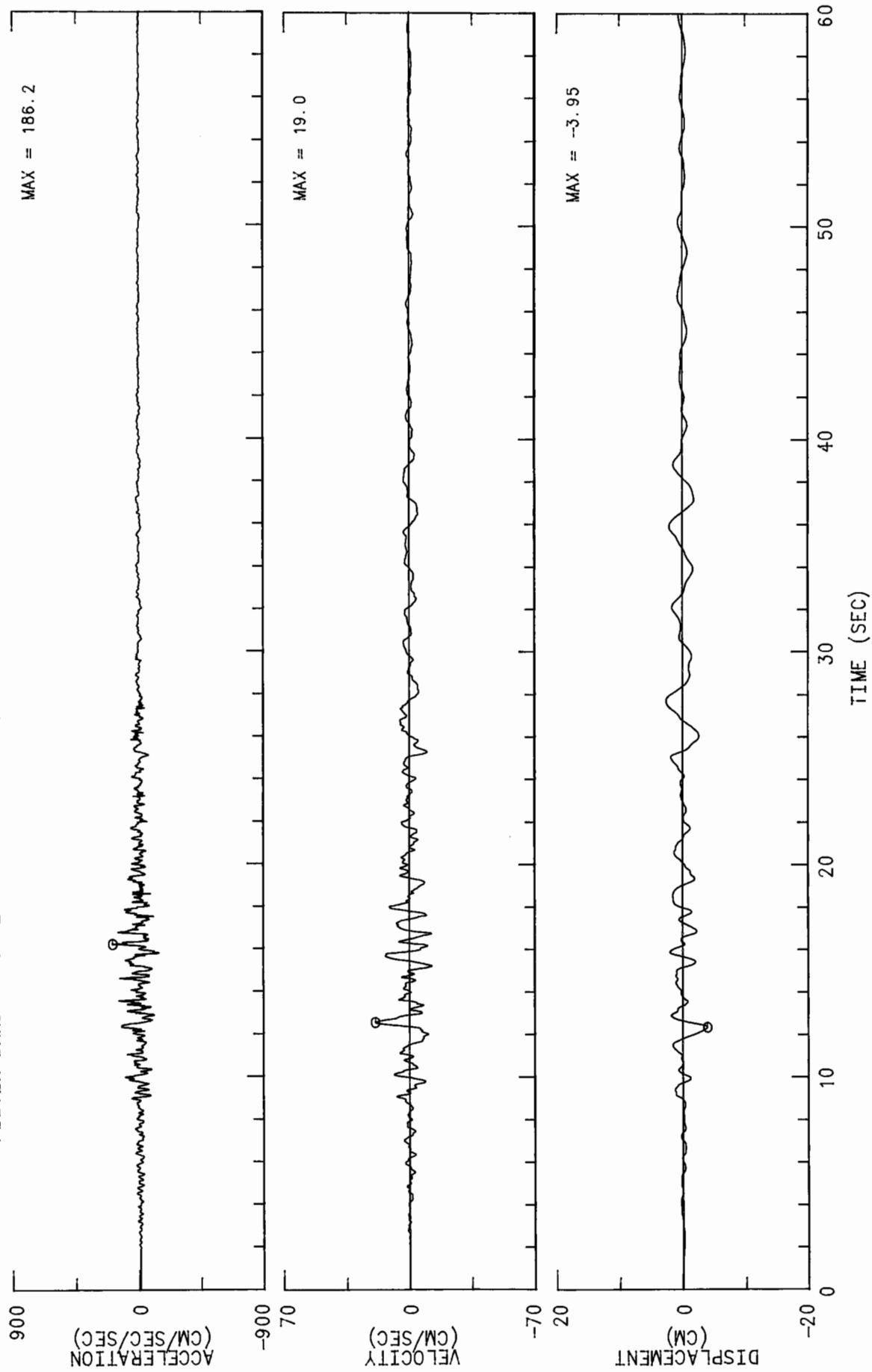
BIG BEAR EARTHQUAKE  
 SAN BERNARDINO - I10/215 INTERCHANGE      JUNE 28, 1992 08:05 PDT  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10--.20 TO 46.0-50.0 HZ.      23631-E0783-92180.09 082793.1913-QB92A783



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE CHN 3 (STA CHN 35) : UP (NORTH ABUTMENT)  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0783-92180.09 082793.1913-QB92A783

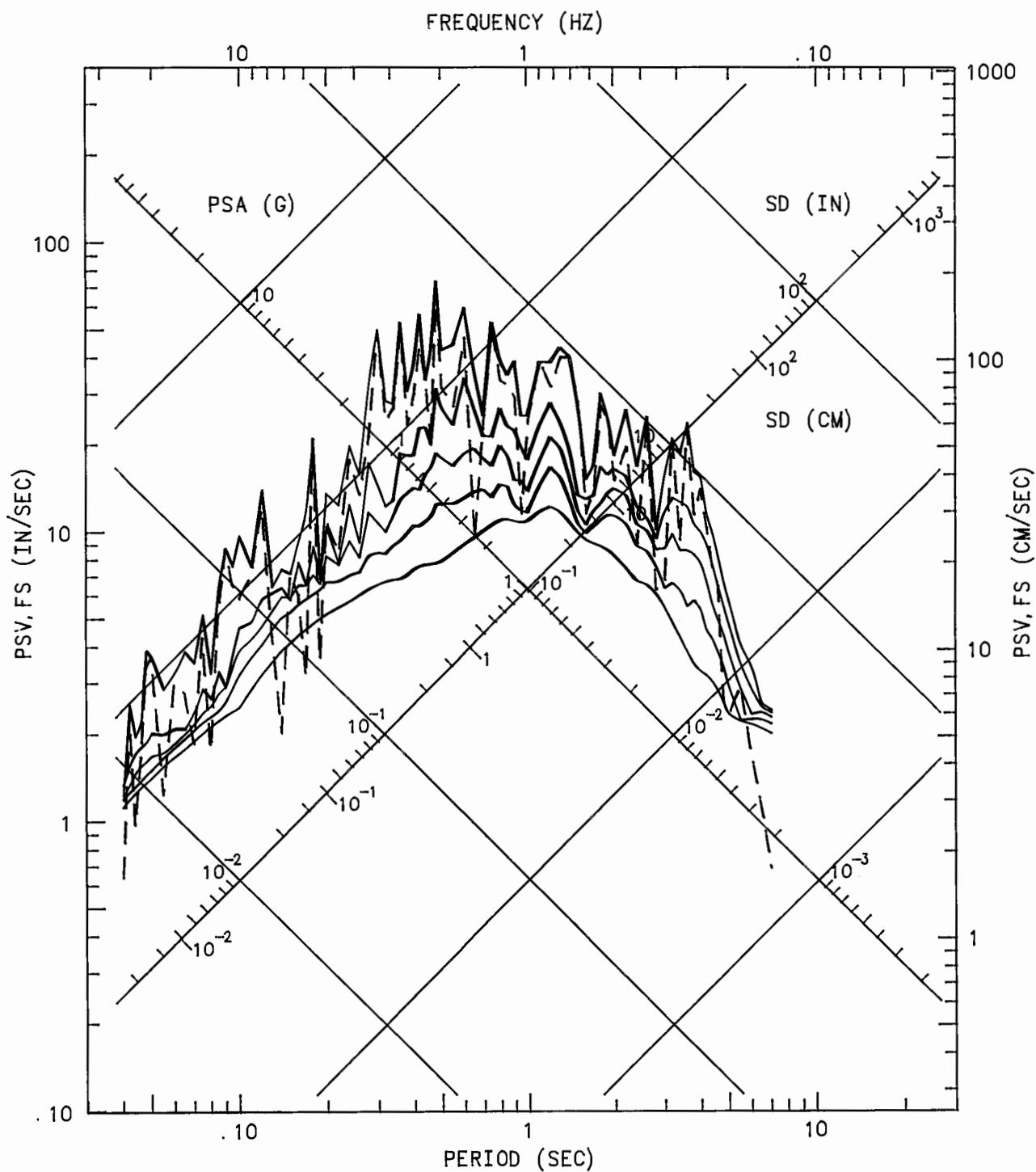


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I 10/215 INTERCHANGE CHN 4 (STA CHN 36) : TRAN (NORTH ABUTMENT)  
 INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
 FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23631-E0783-92180.09 082793.1913-QB92A783



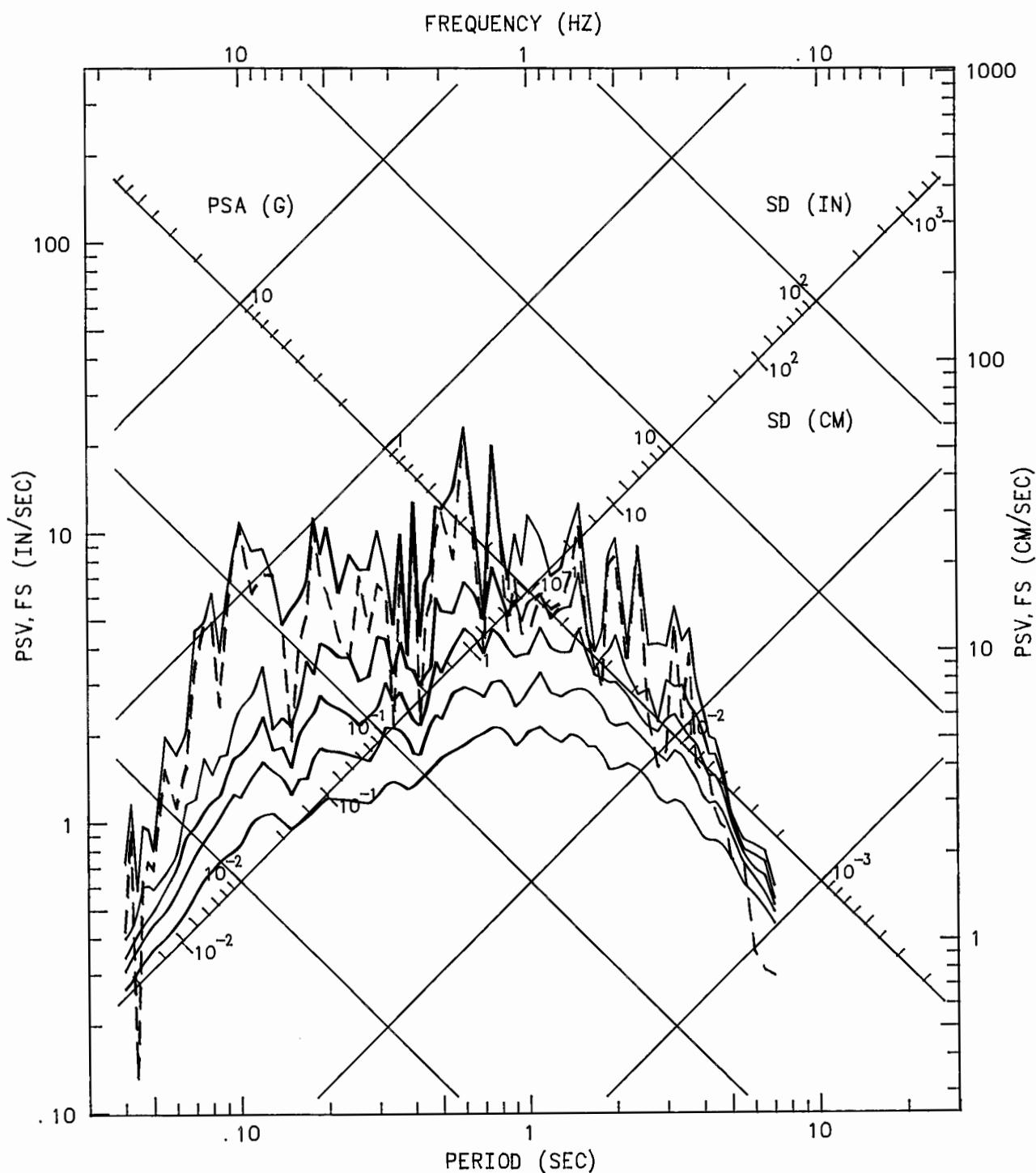
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1: LONG (WEST ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



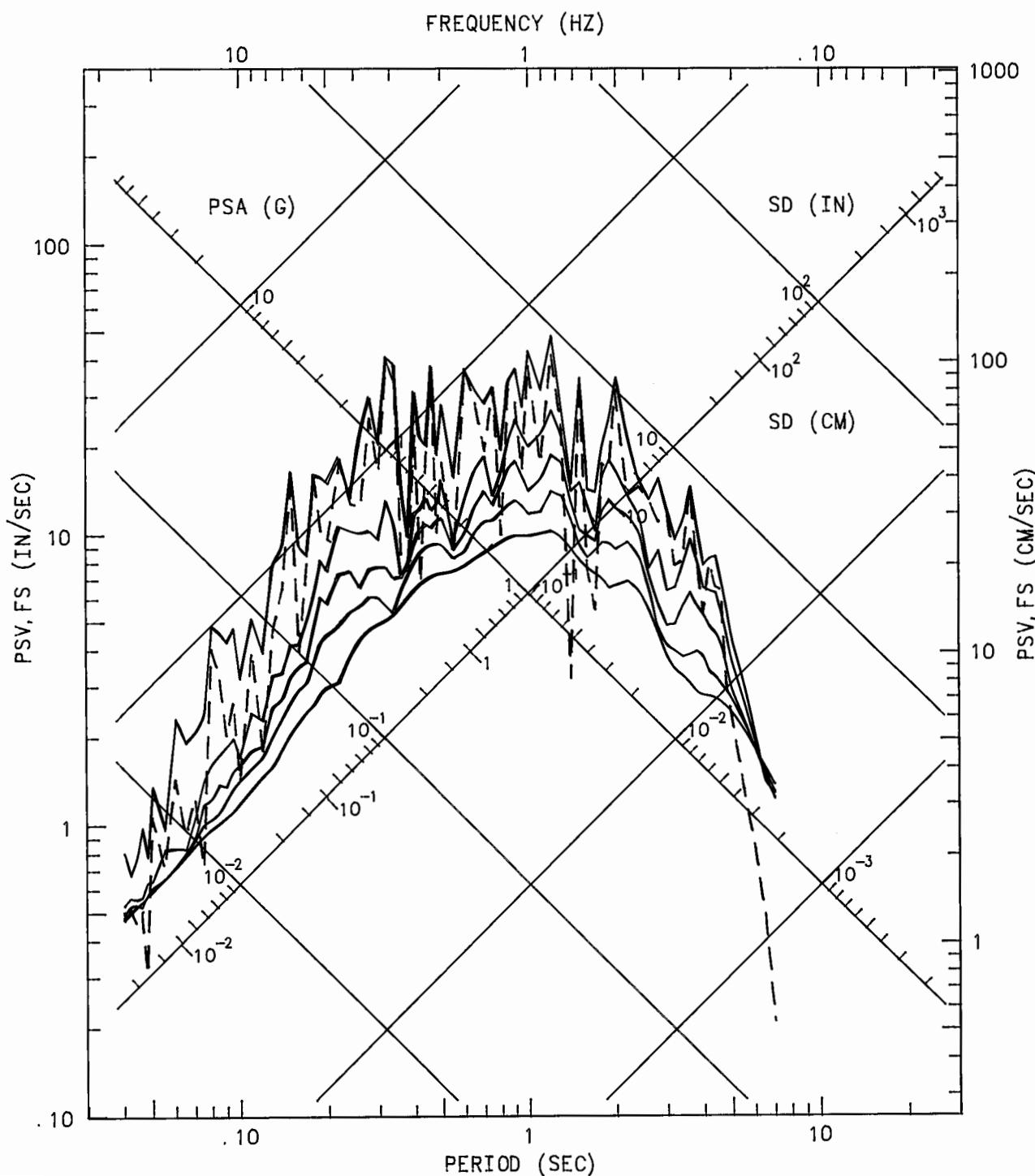
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2: UP (WEST ABUTMENT)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



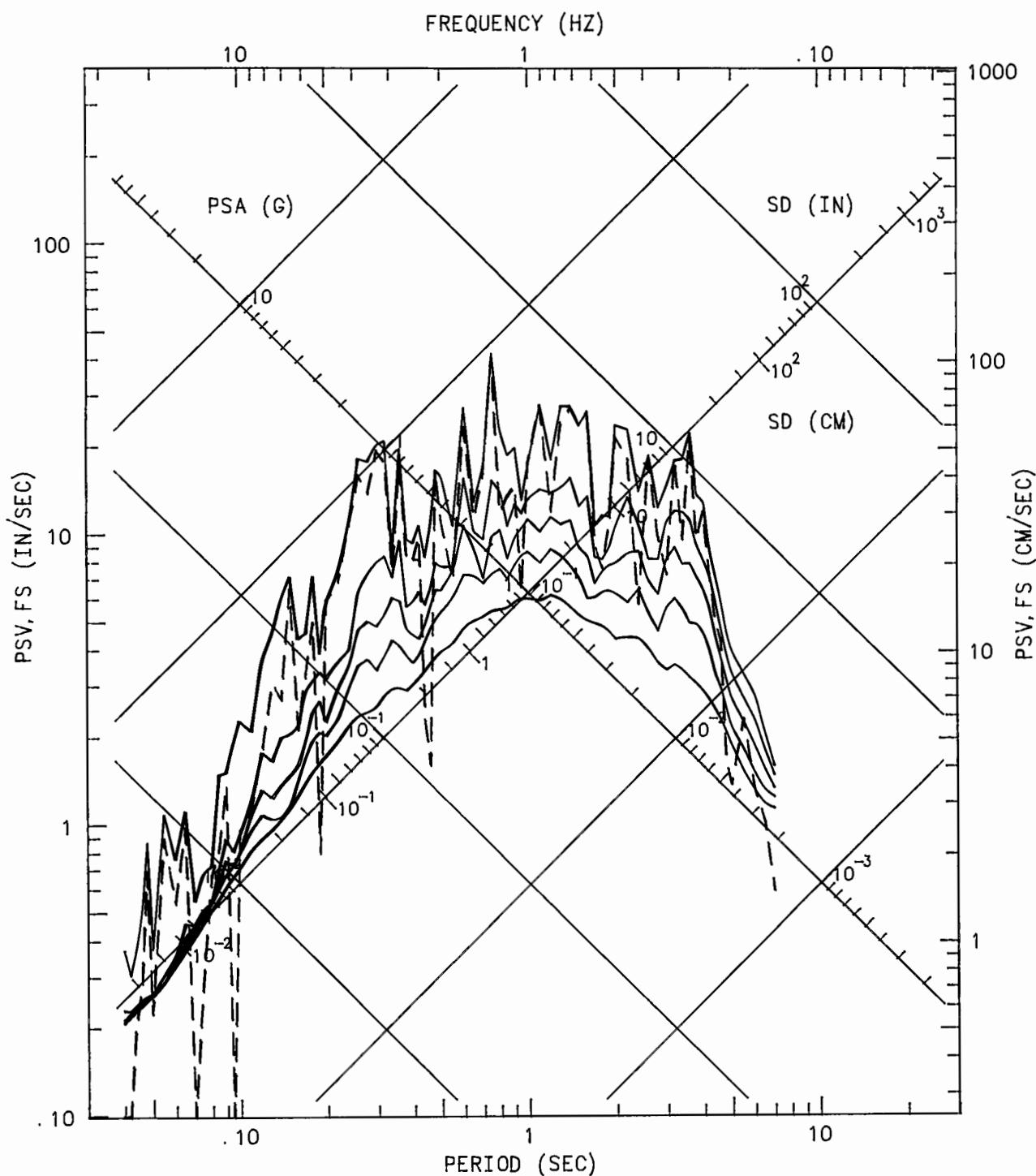
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3: TRAN (WEST ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



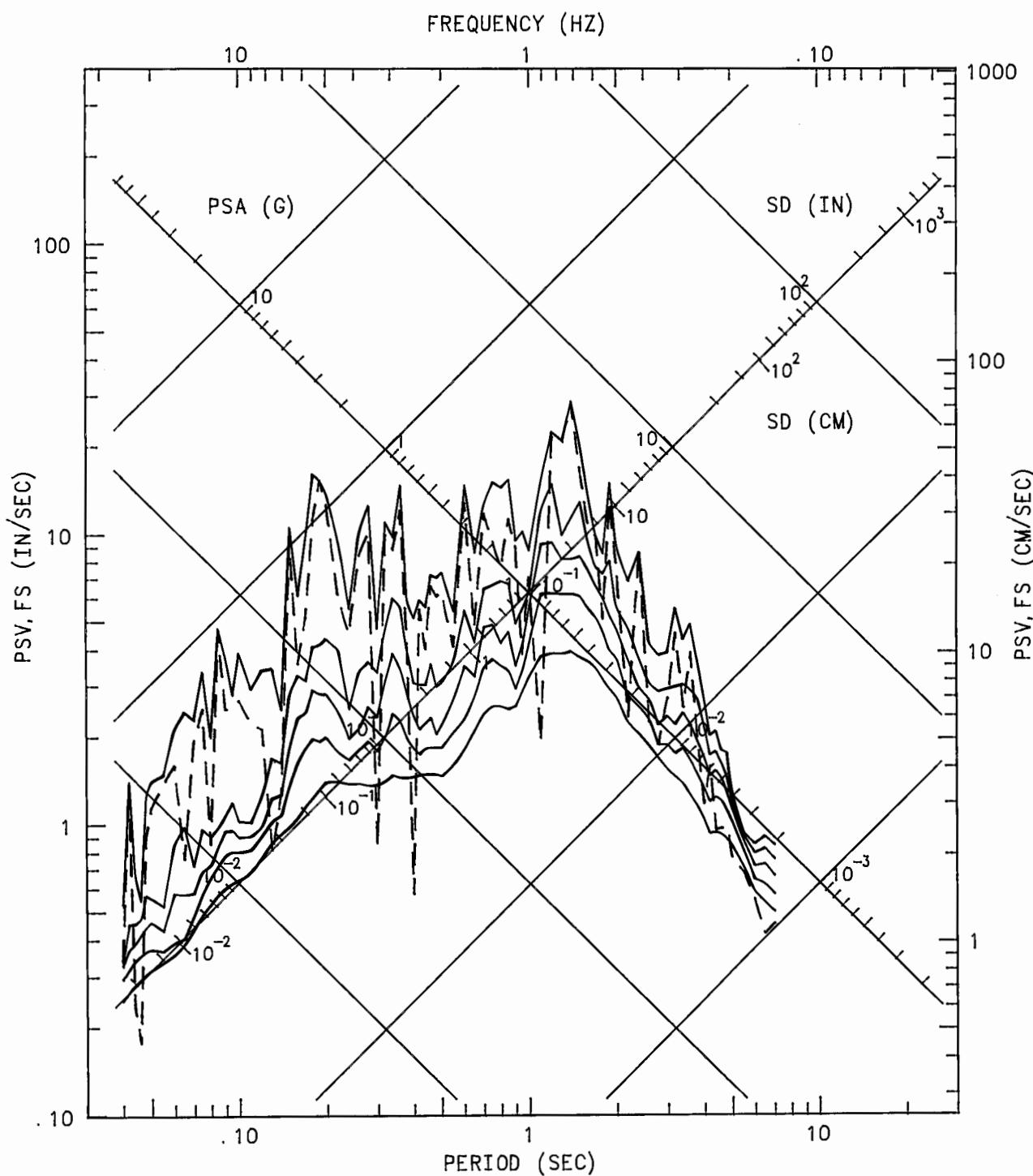
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4: LONG (BENT 3, FOOTING)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



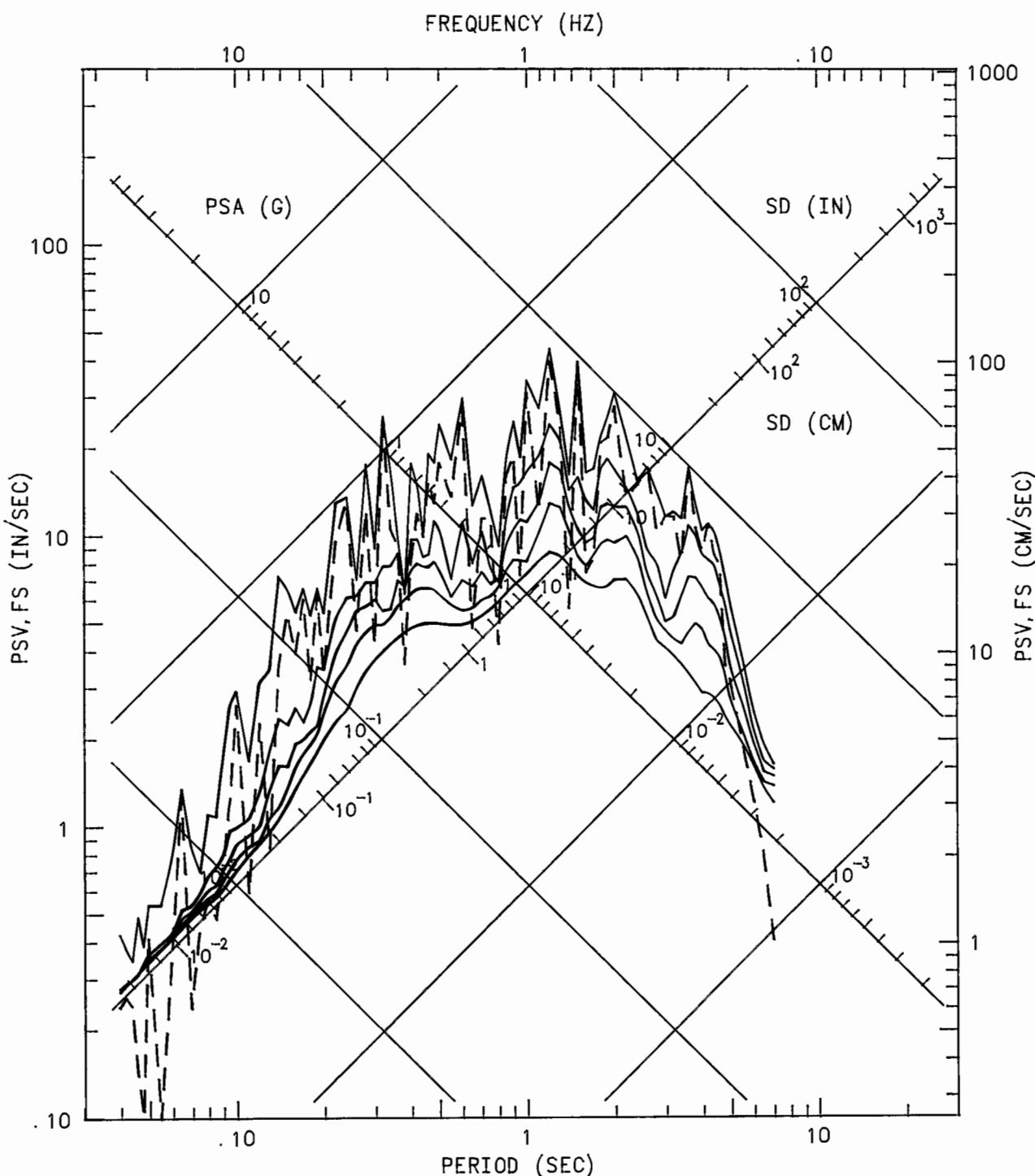
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 5): UP (BENT 8, FOOTING, N. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

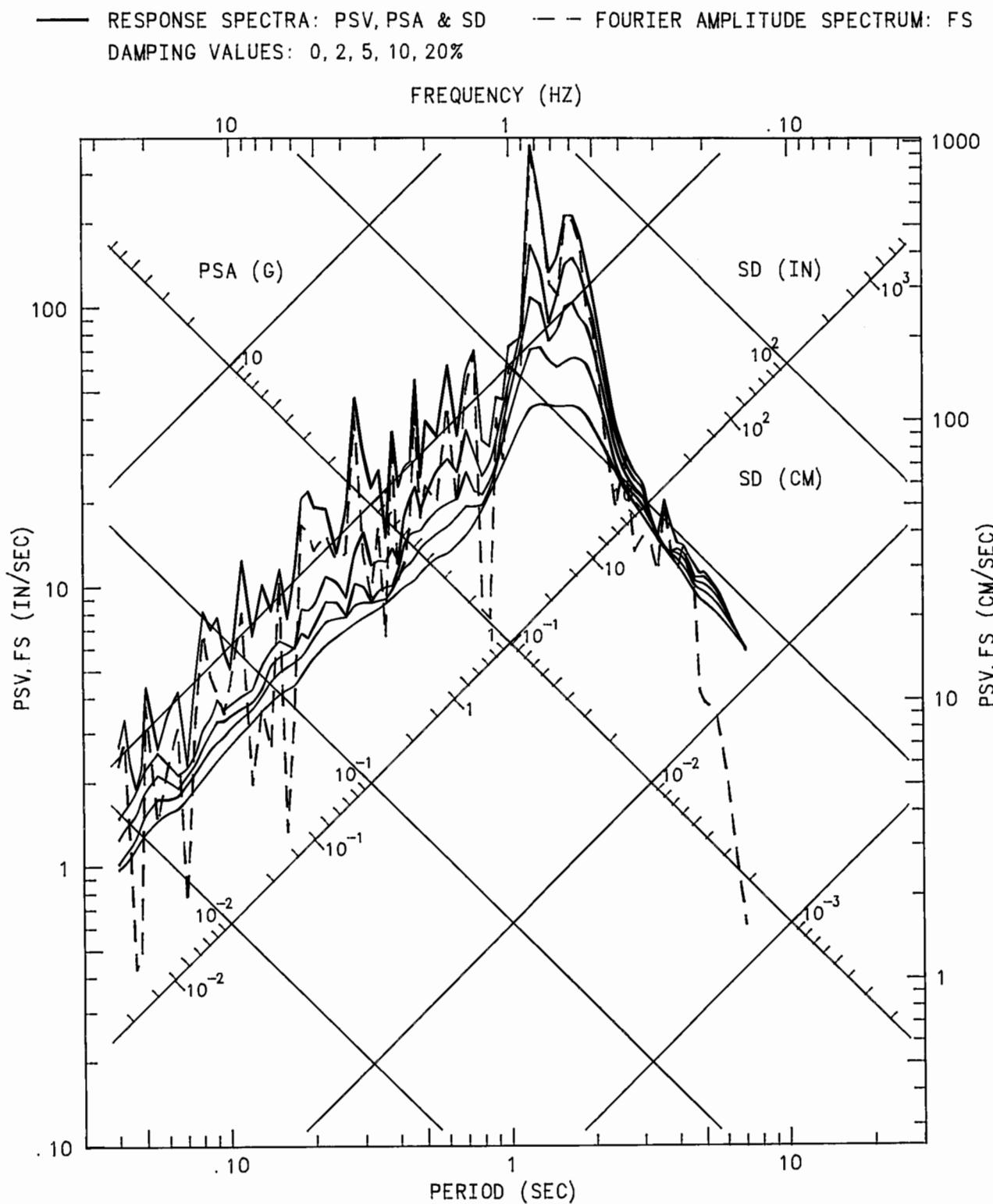


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
CHN 2 (STA CHN 6): TRAN (BENT 3, FOOTING)  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0--50.0 HZ.  
23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD      - - - FOURIER AMPLITUDE SPECTRUM: FS  
DAMPING VALUES: 0, 2, 5, 10, 20%

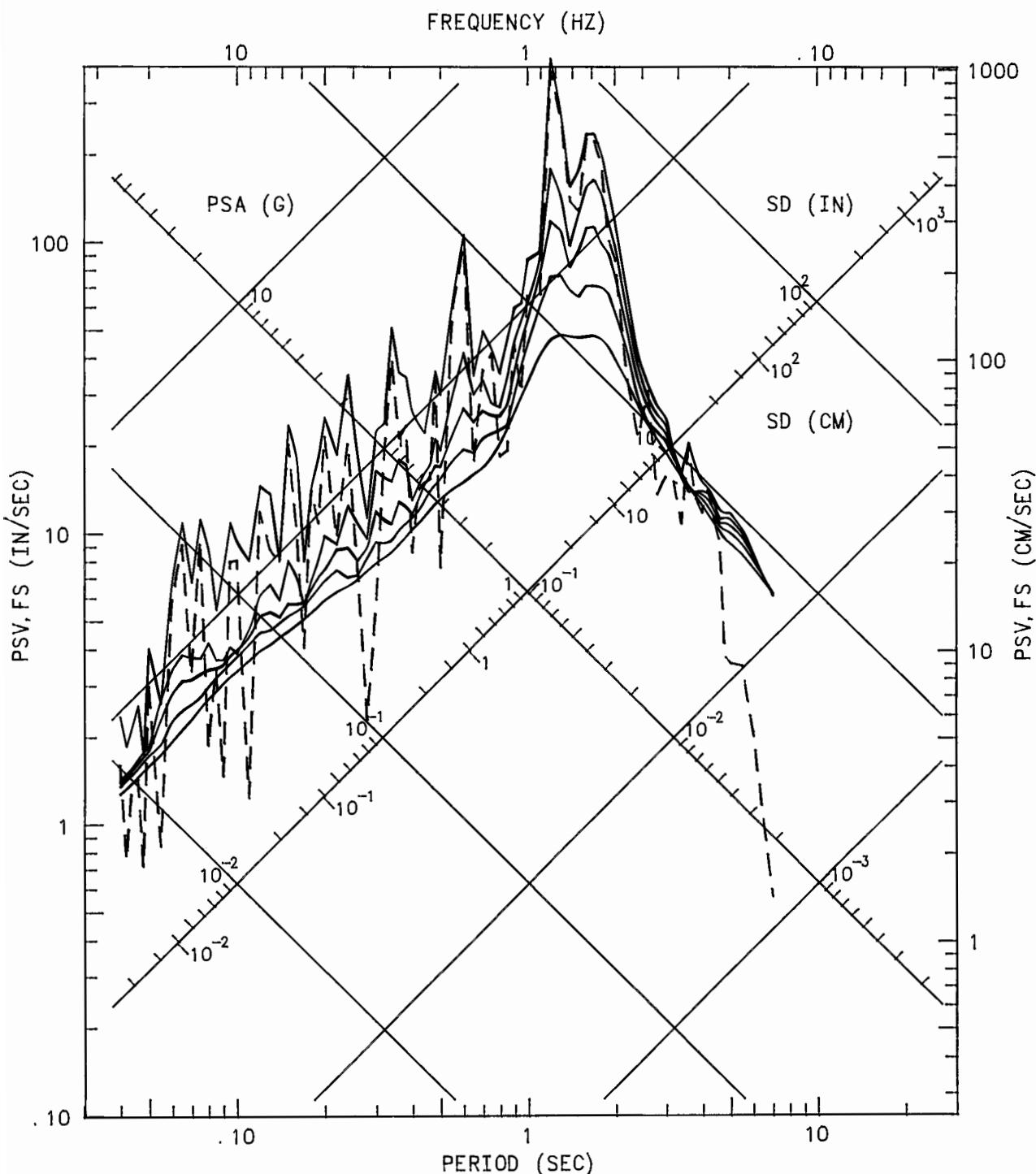


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 7): TRAN (HINGE NEAR BENT 3, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631



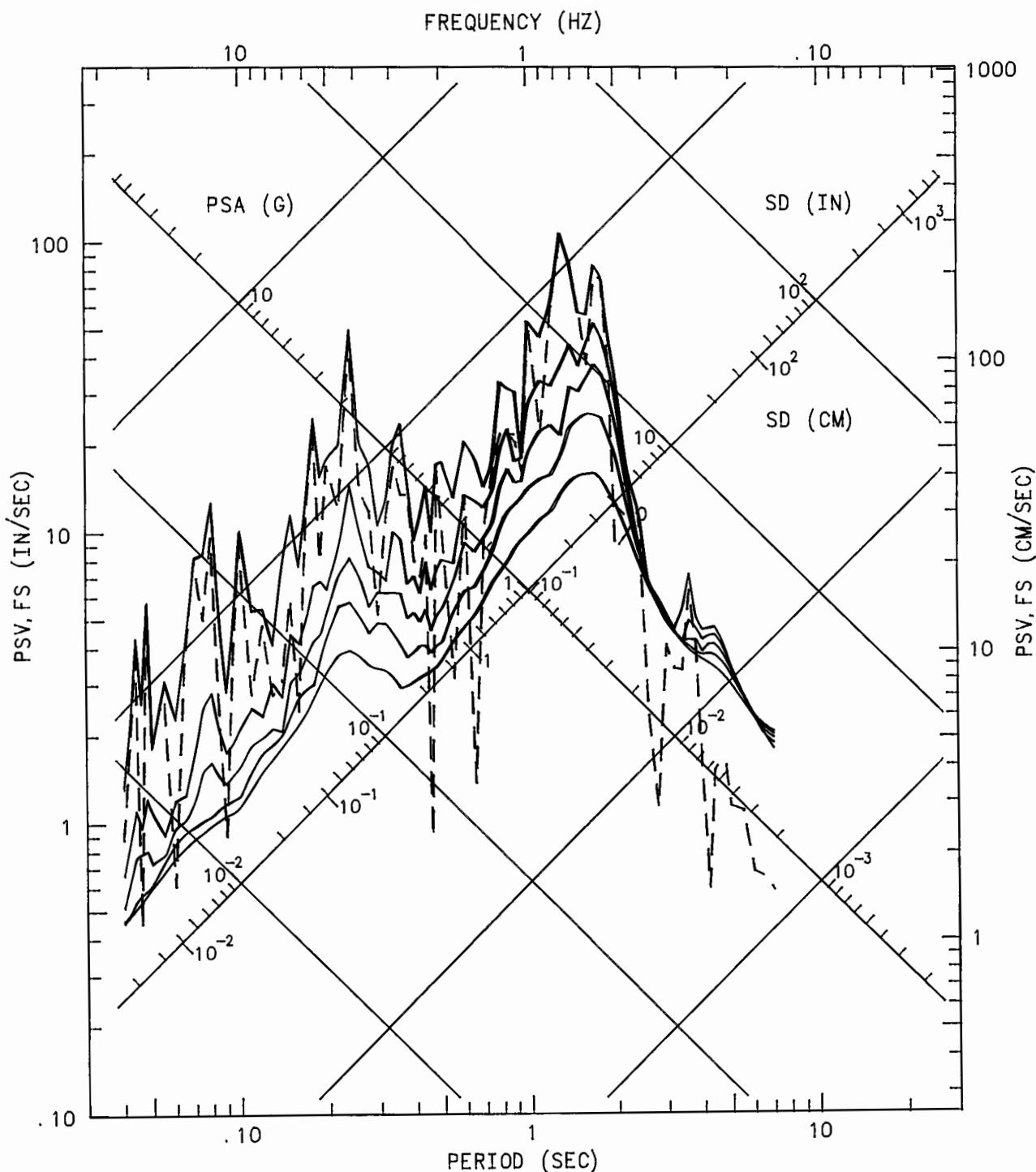
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 8): TRAN (HINGE NEAR BENT 3, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD      —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



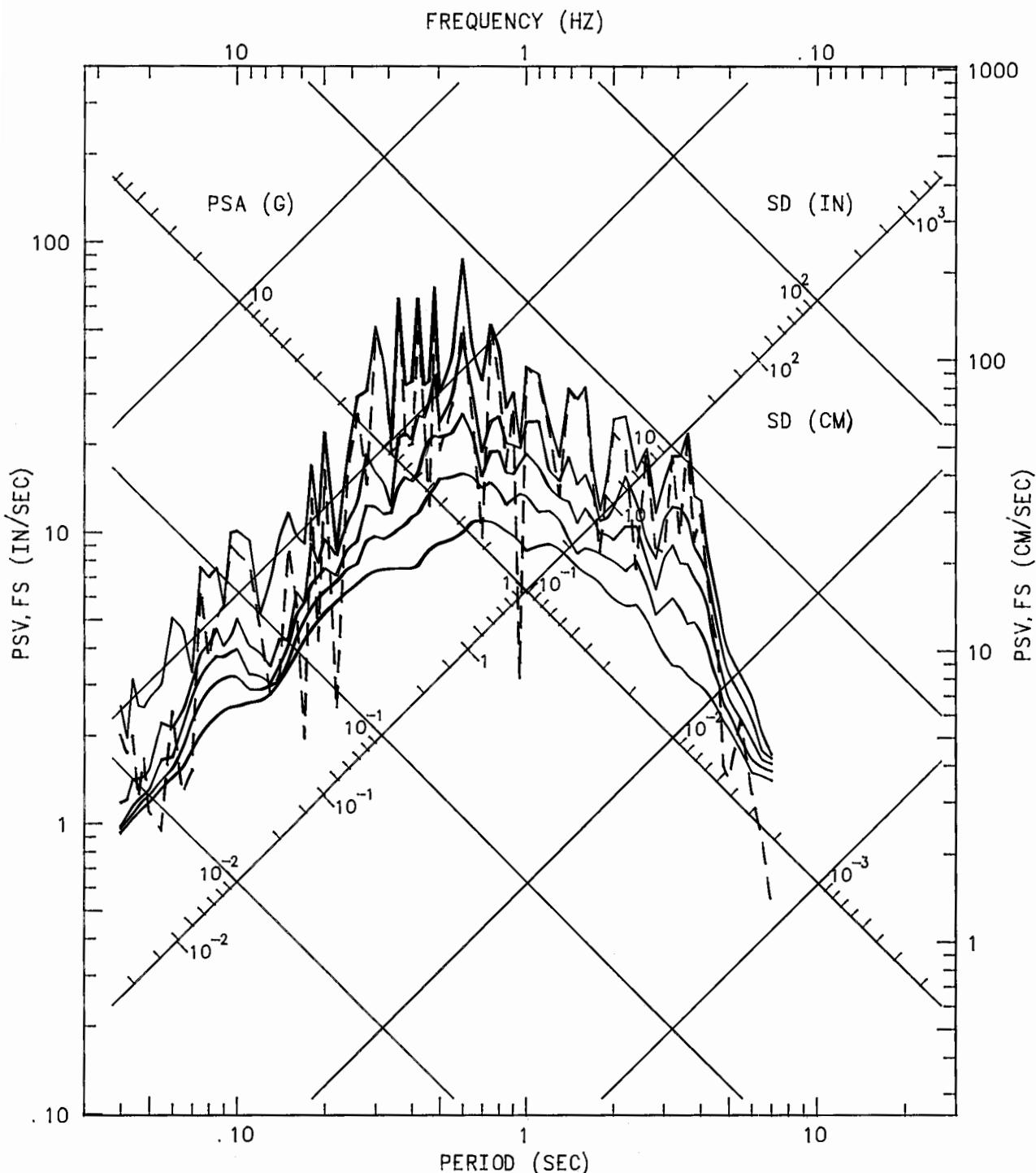
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 9): UP (BENT 7, DECK)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



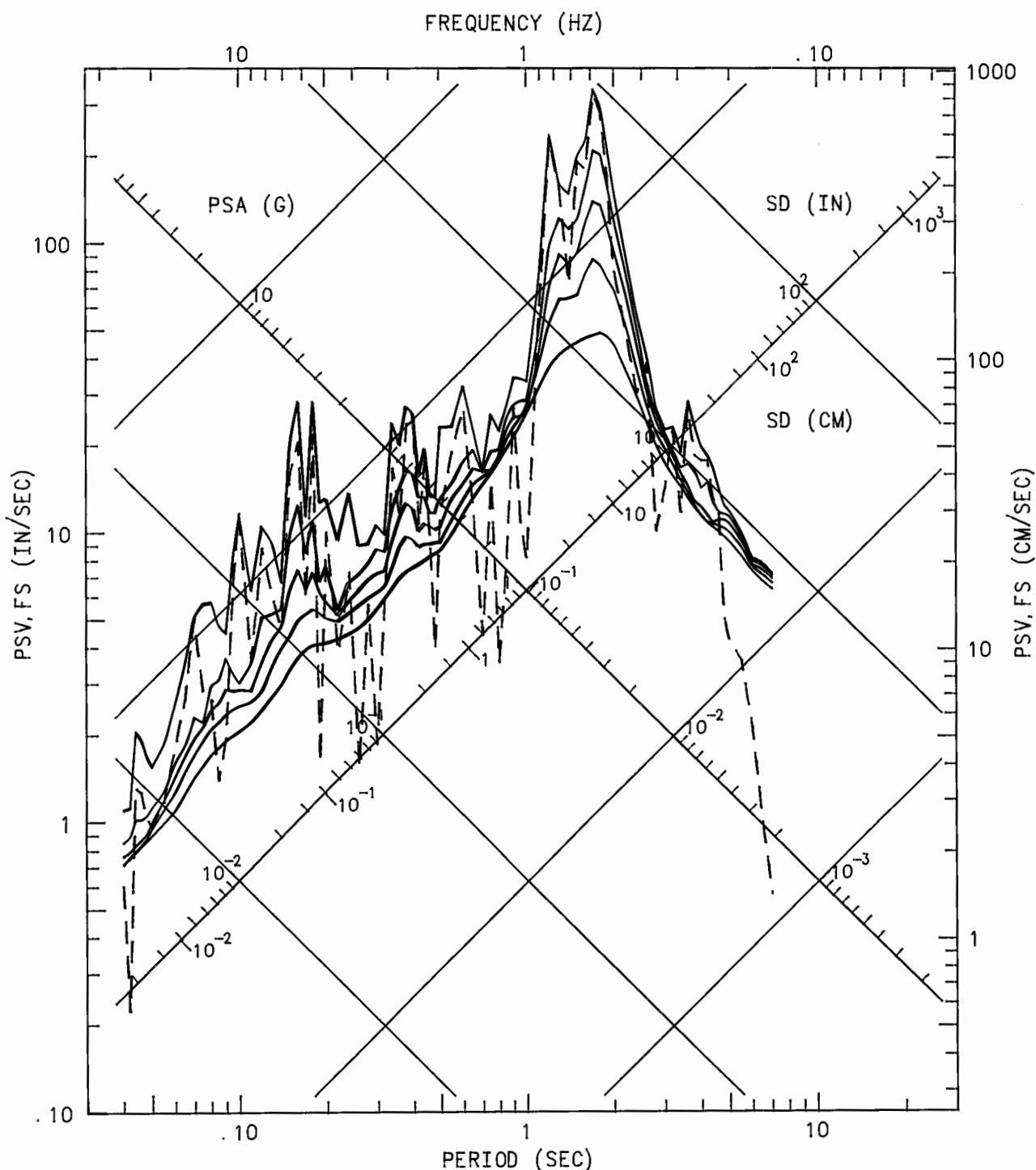
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 10): LONG (HINGE NEAR BENT 3, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD      —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



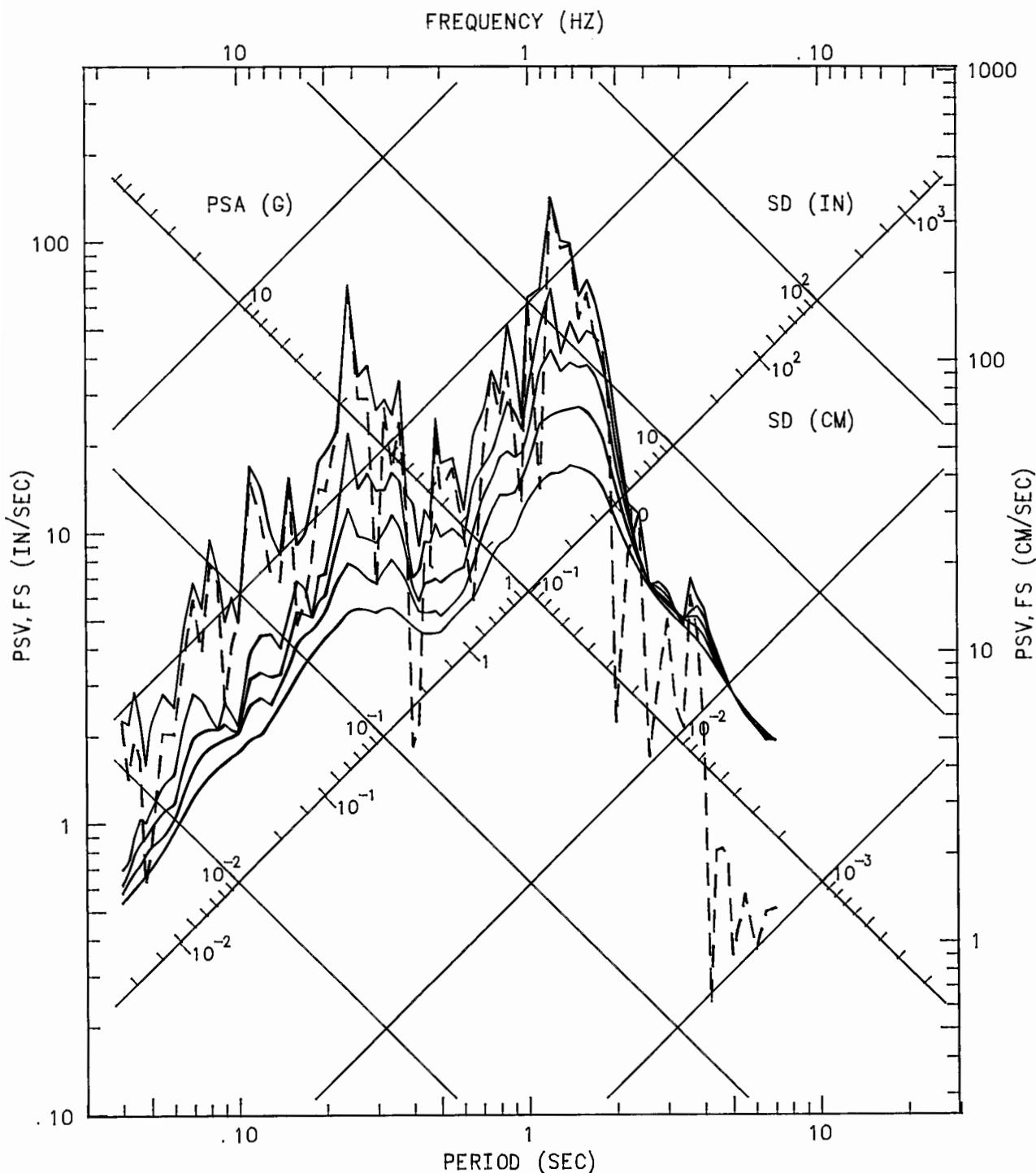
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 11): TRAN (DECK BETWEEN BENTS 5 & 6, MID-SPAN)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



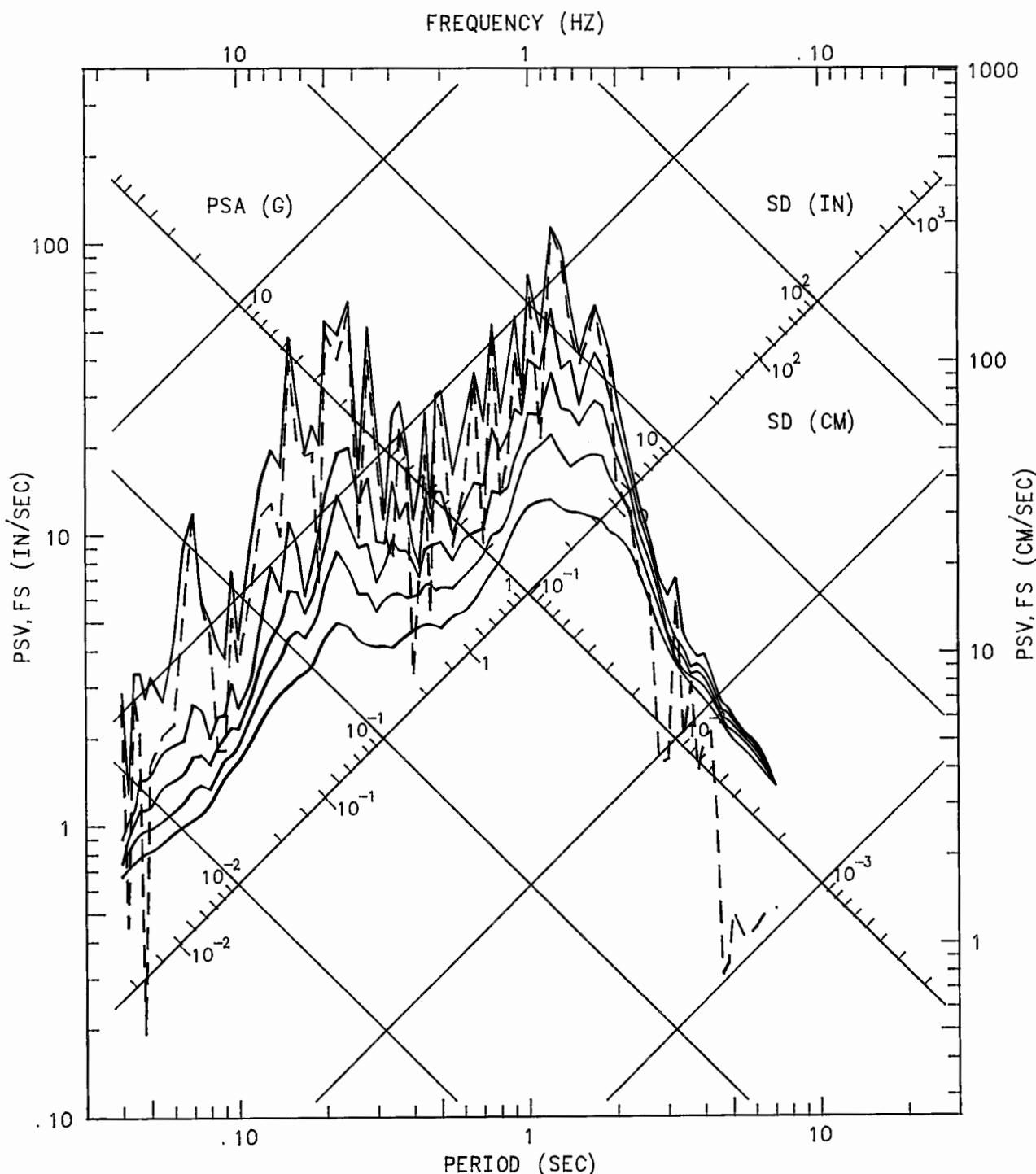
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 12): UP (BENT 8, DECK, N. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



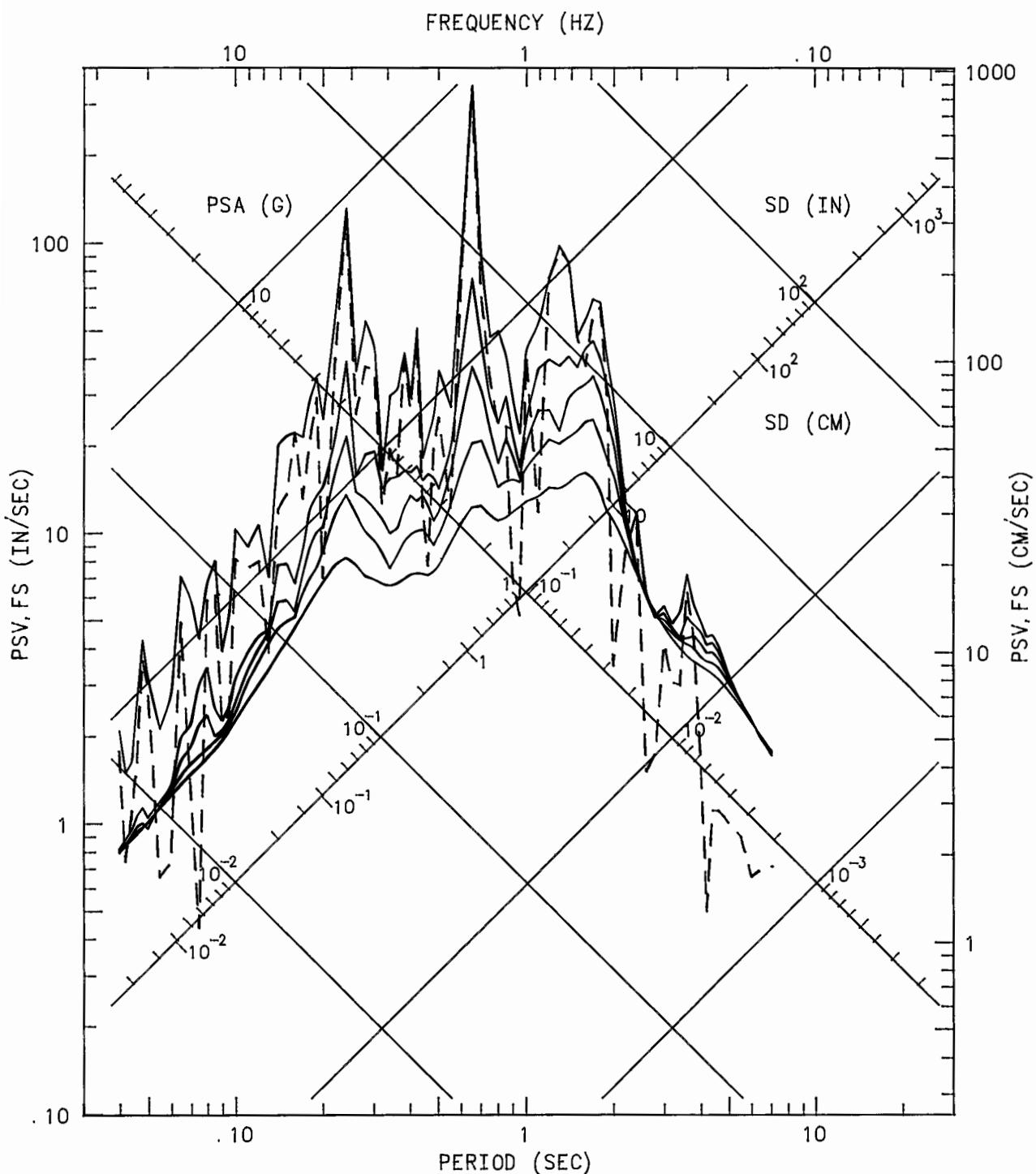
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 13): UP (BENT 8, DECK, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



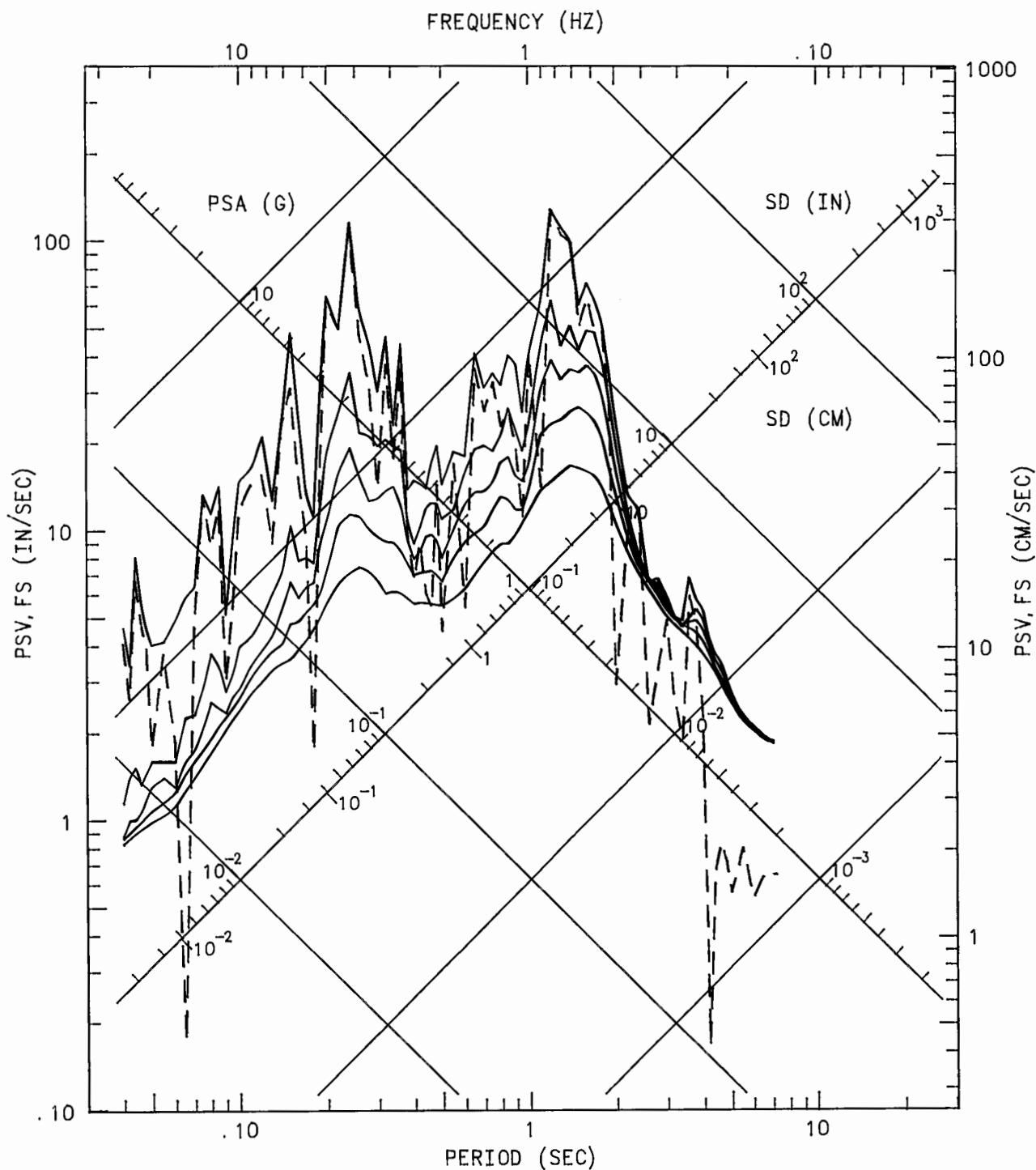
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 14): UP (DECK BETWEEN BENTS 7 & 8, MID-SPAN)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



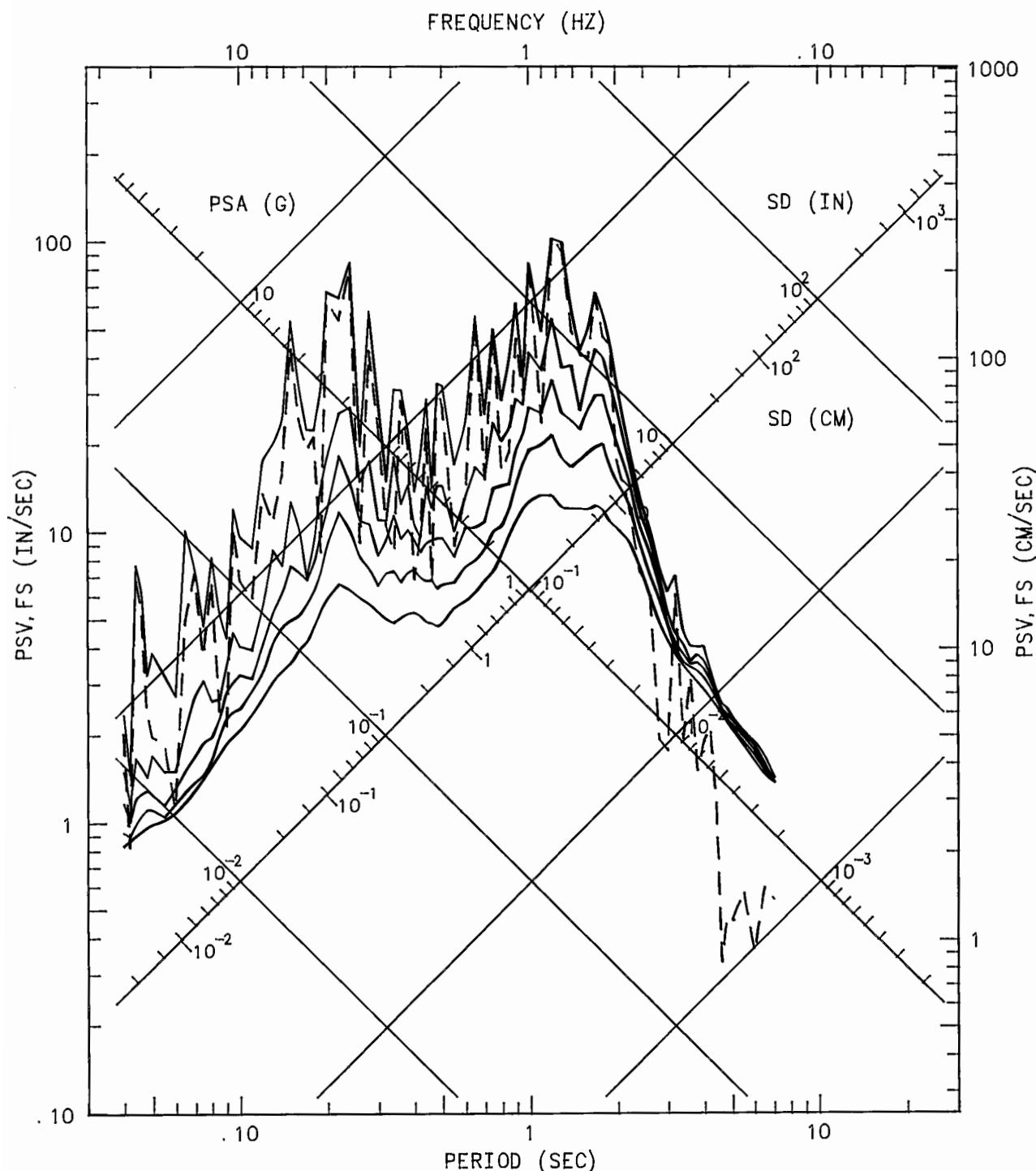
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 15): UP (HINGE NEAR BENT 8, N. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



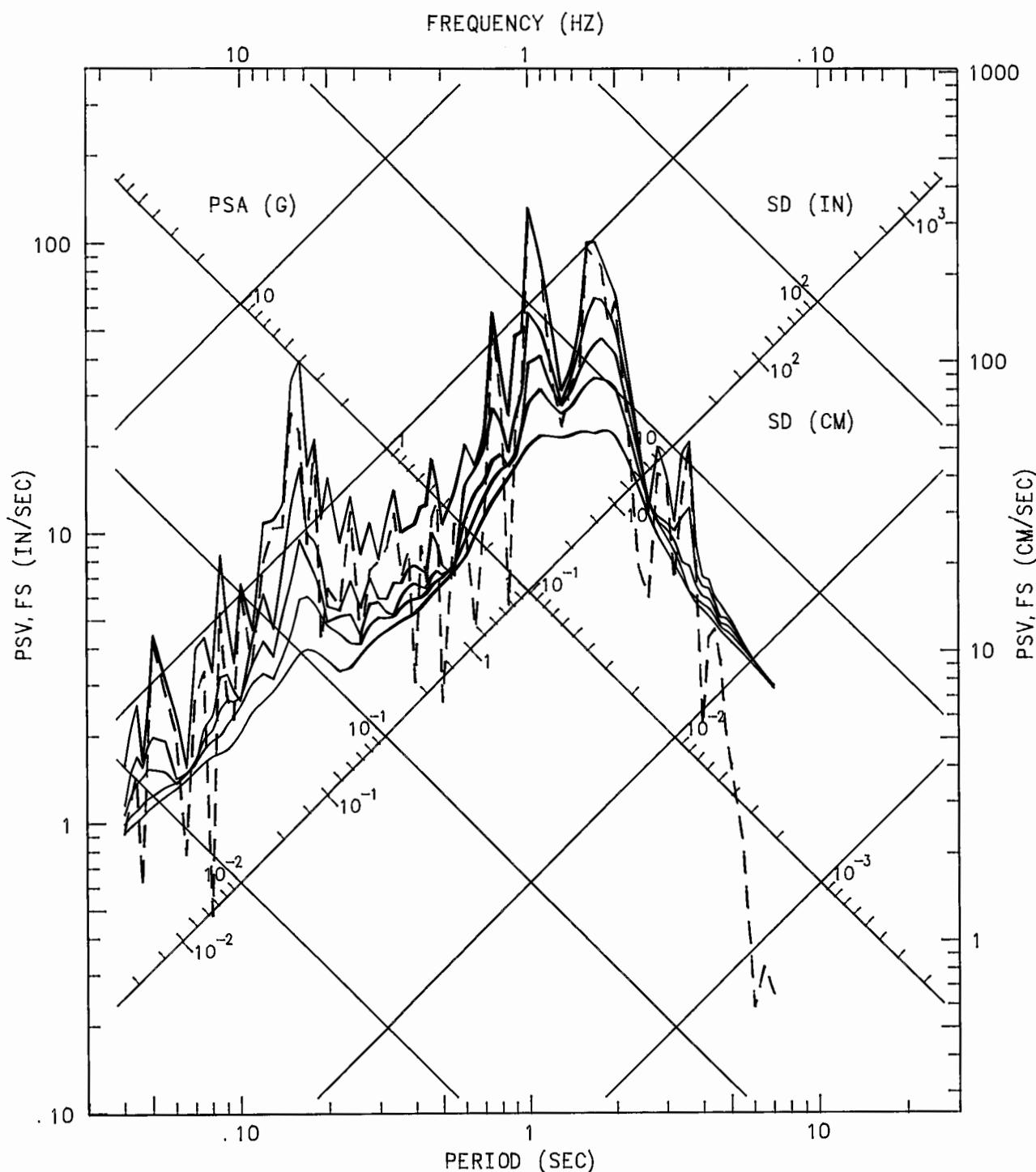
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 16): UP (HINGE NEAR BENT 8, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



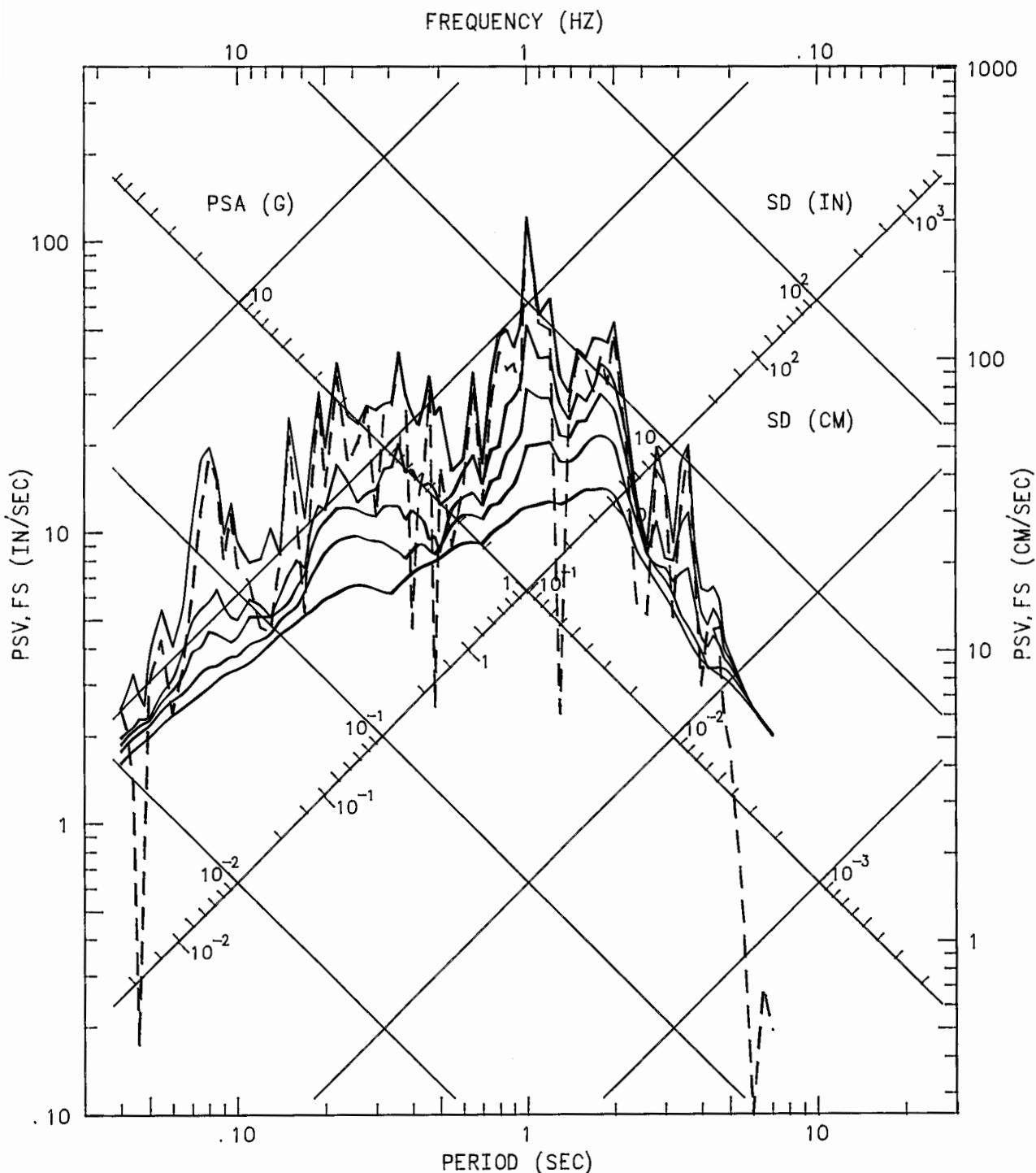
BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 17): LONG (HINGE NEAR BENT 8, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



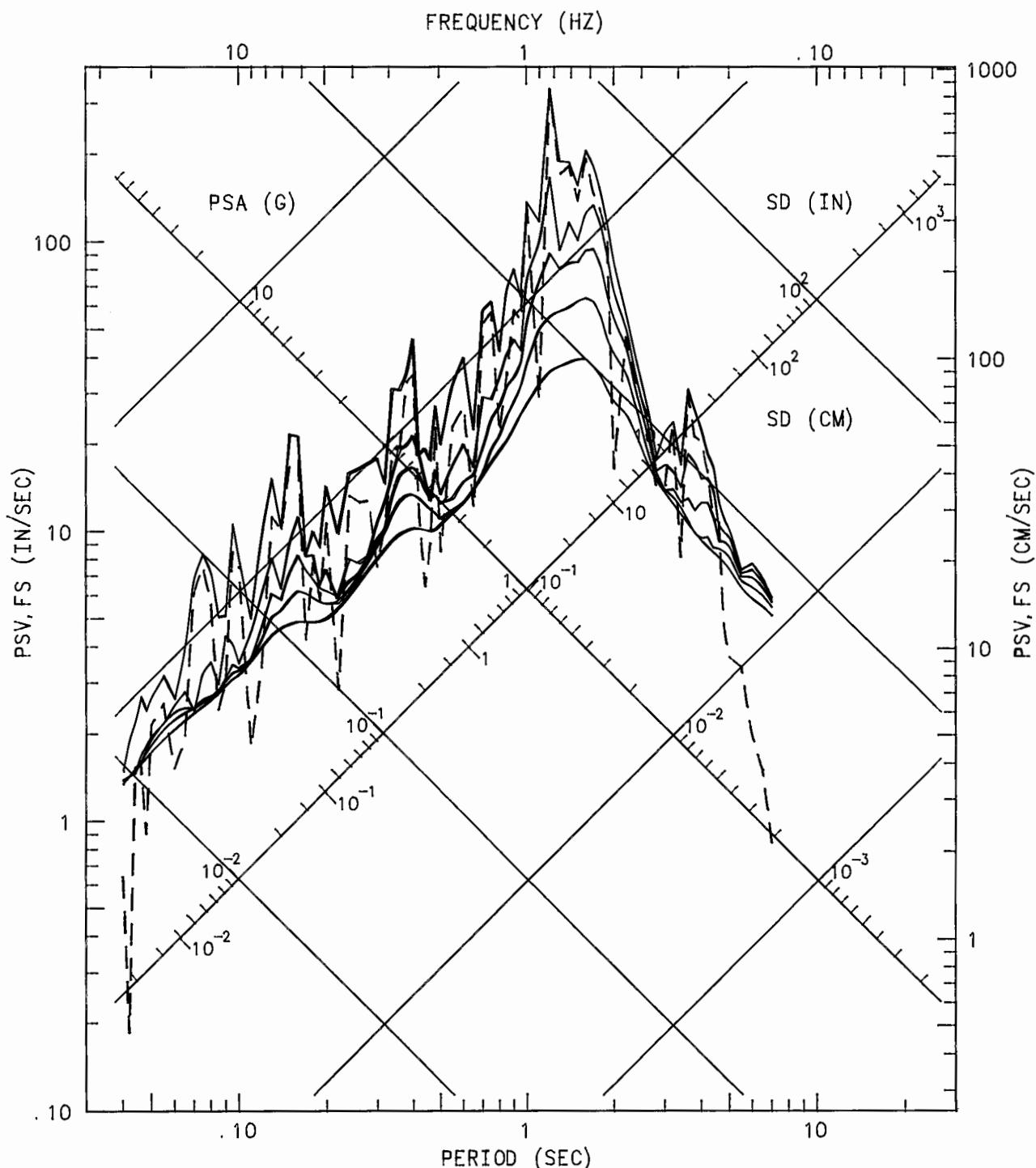
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 18): LONG (HINGE NEAR BENT 8, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

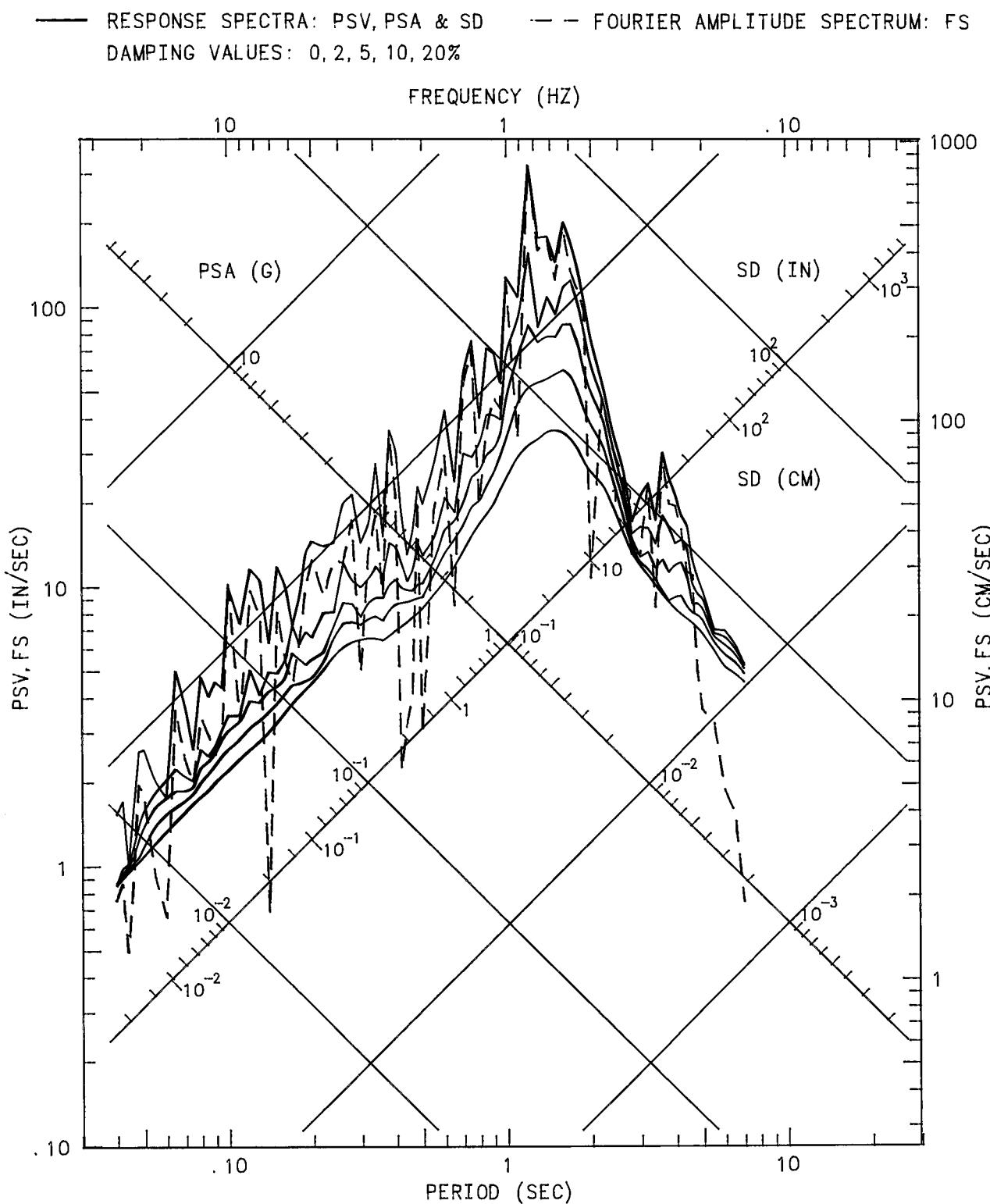


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 19): TRAN (HINGE NEAR BENT 8, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

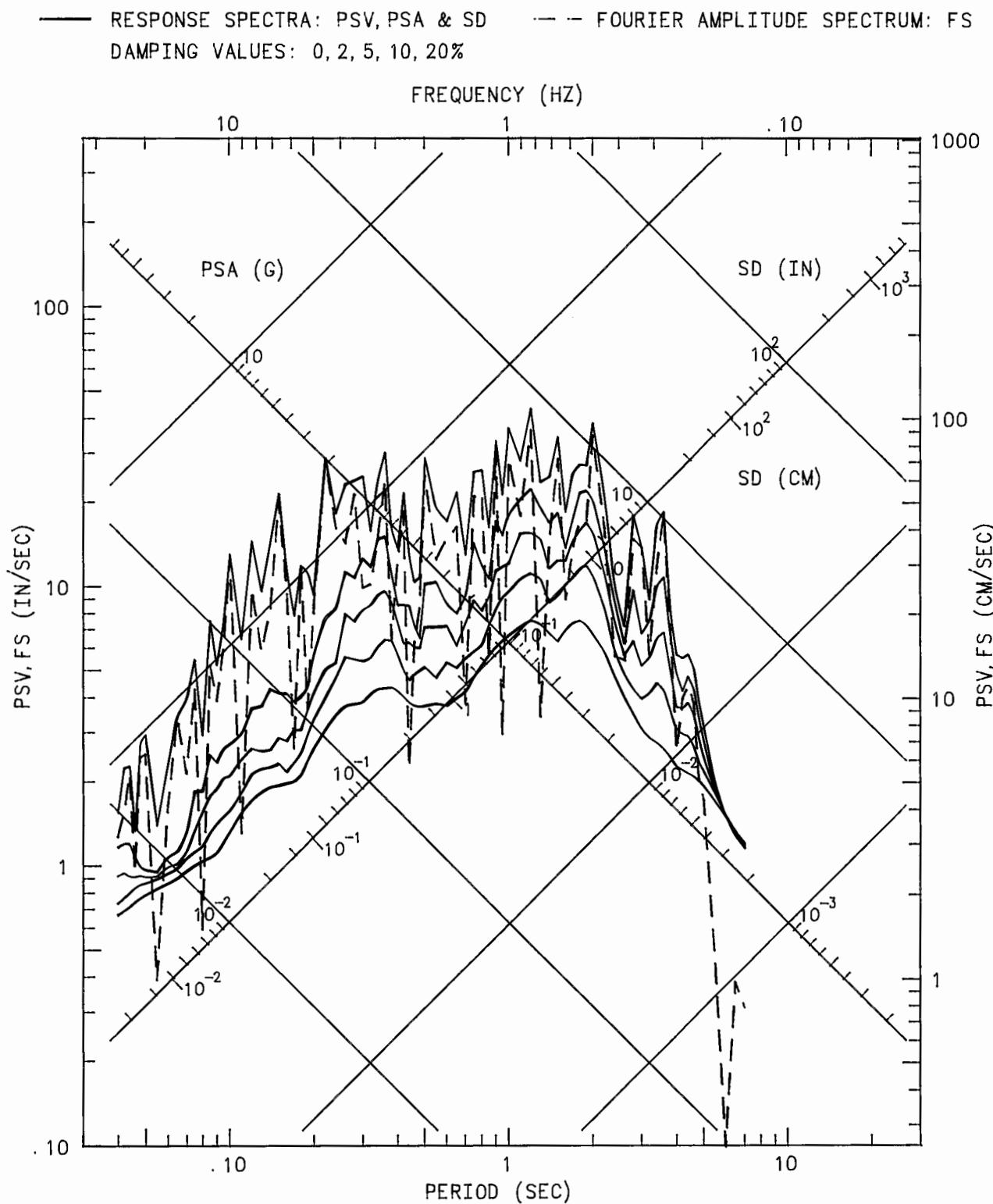
— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 20): TRAN (HINGE NEAR BENT 8, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

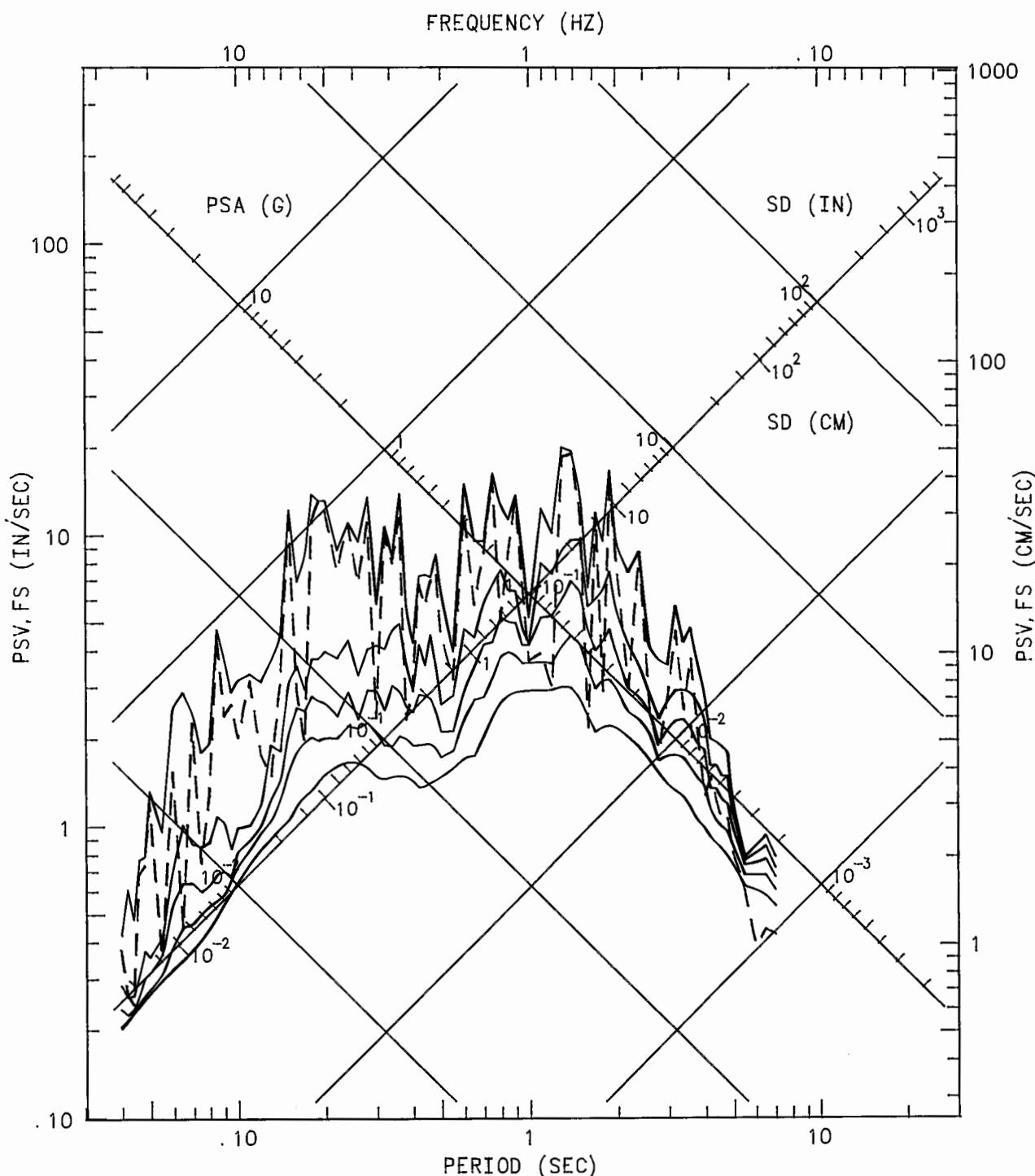


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 22): LONG (BENT 8, FOOTING, S. SIDE)  
 ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631



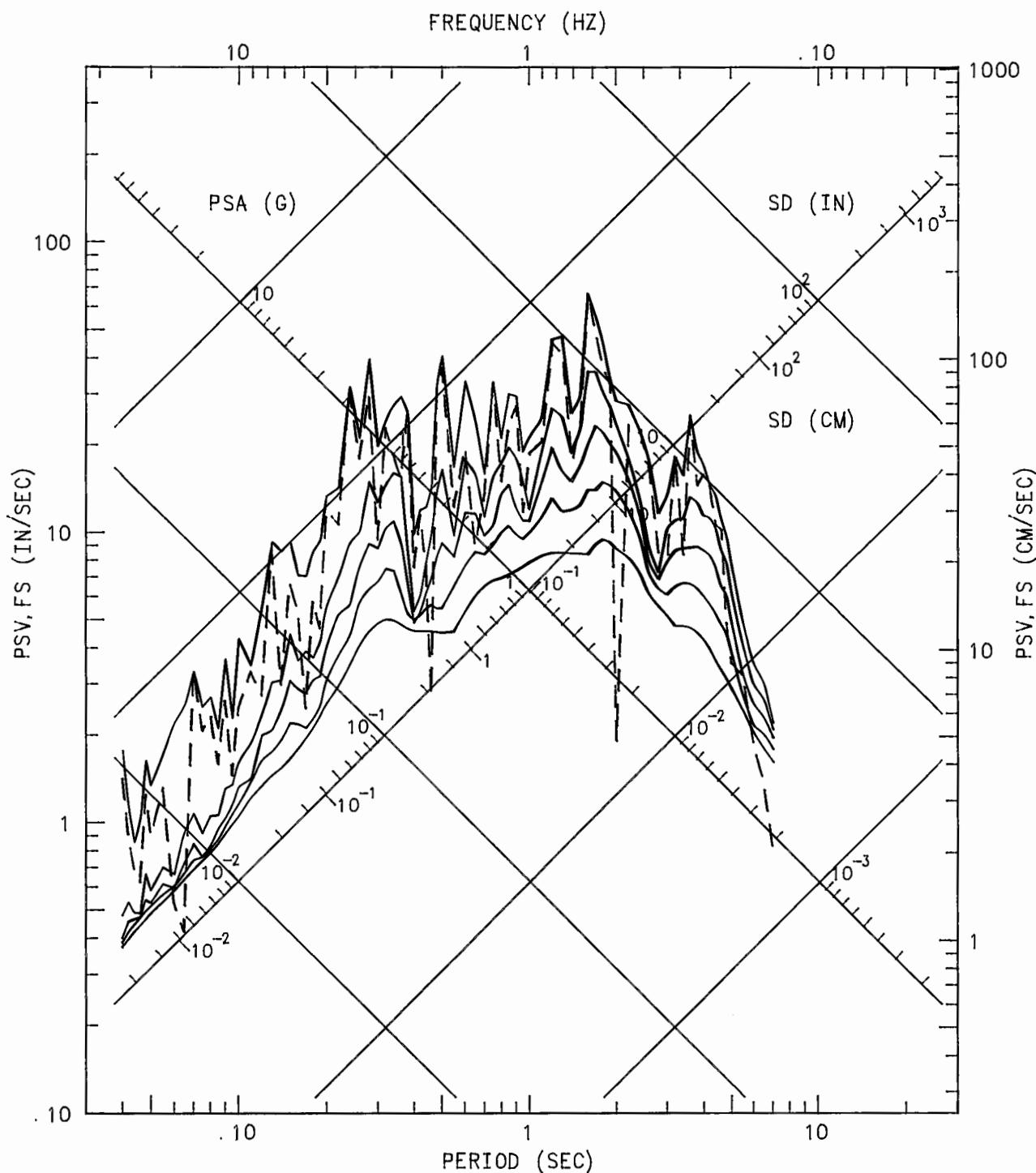
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 23): UP (BENT 8, FOOTING, S. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    —— FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

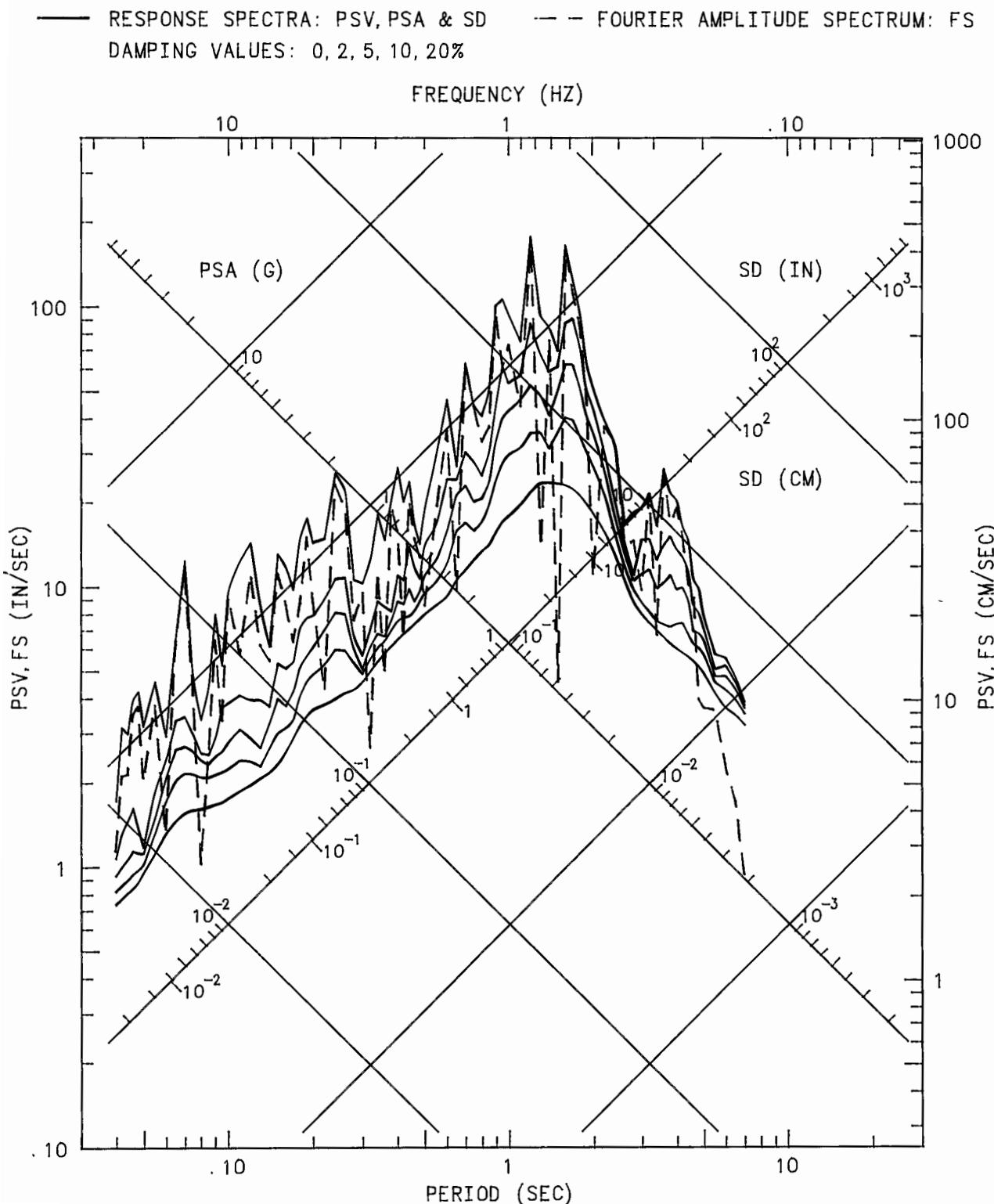


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 24): TRAN (BENT 8, FOOTING, S. SIDE)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

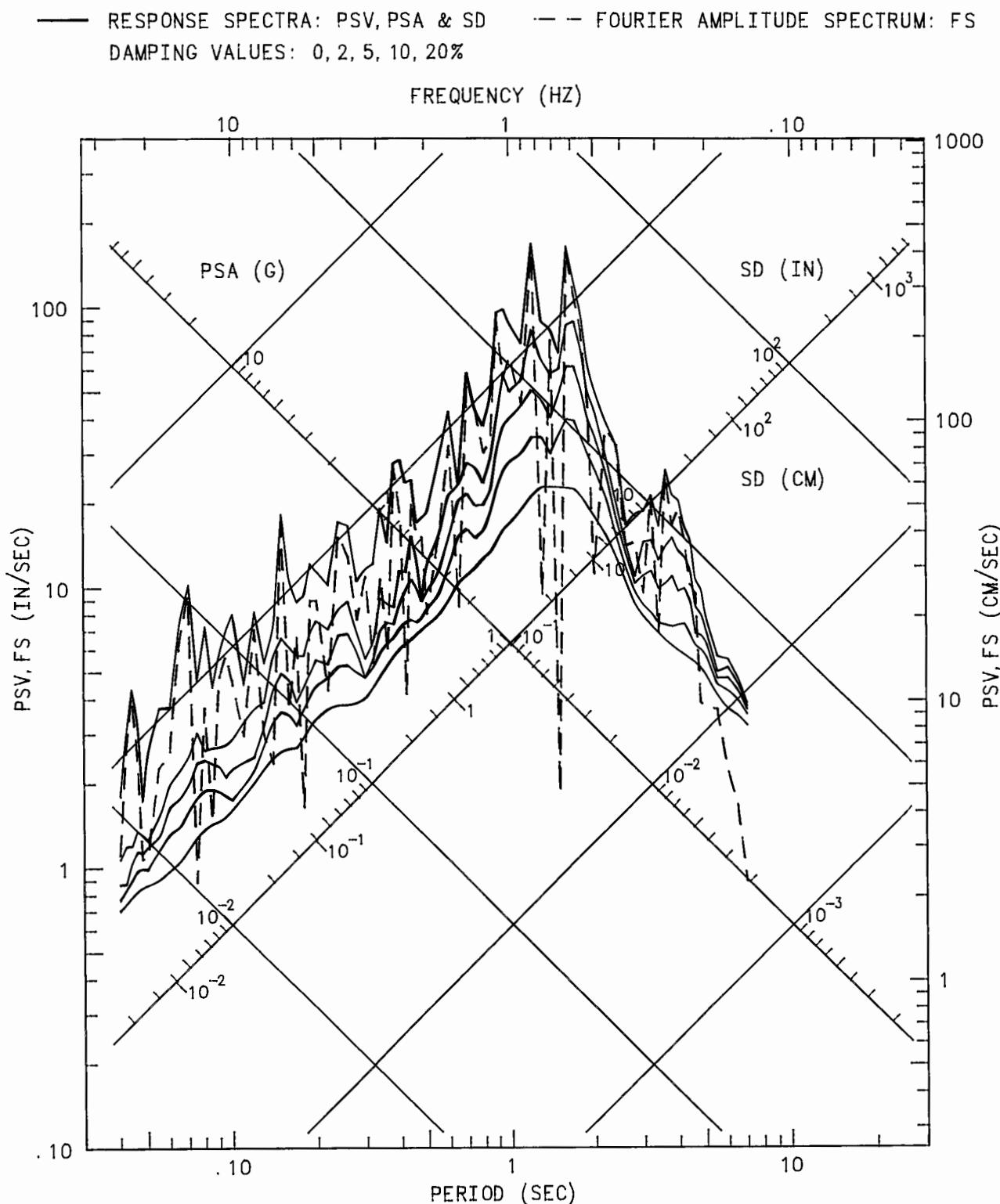
— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



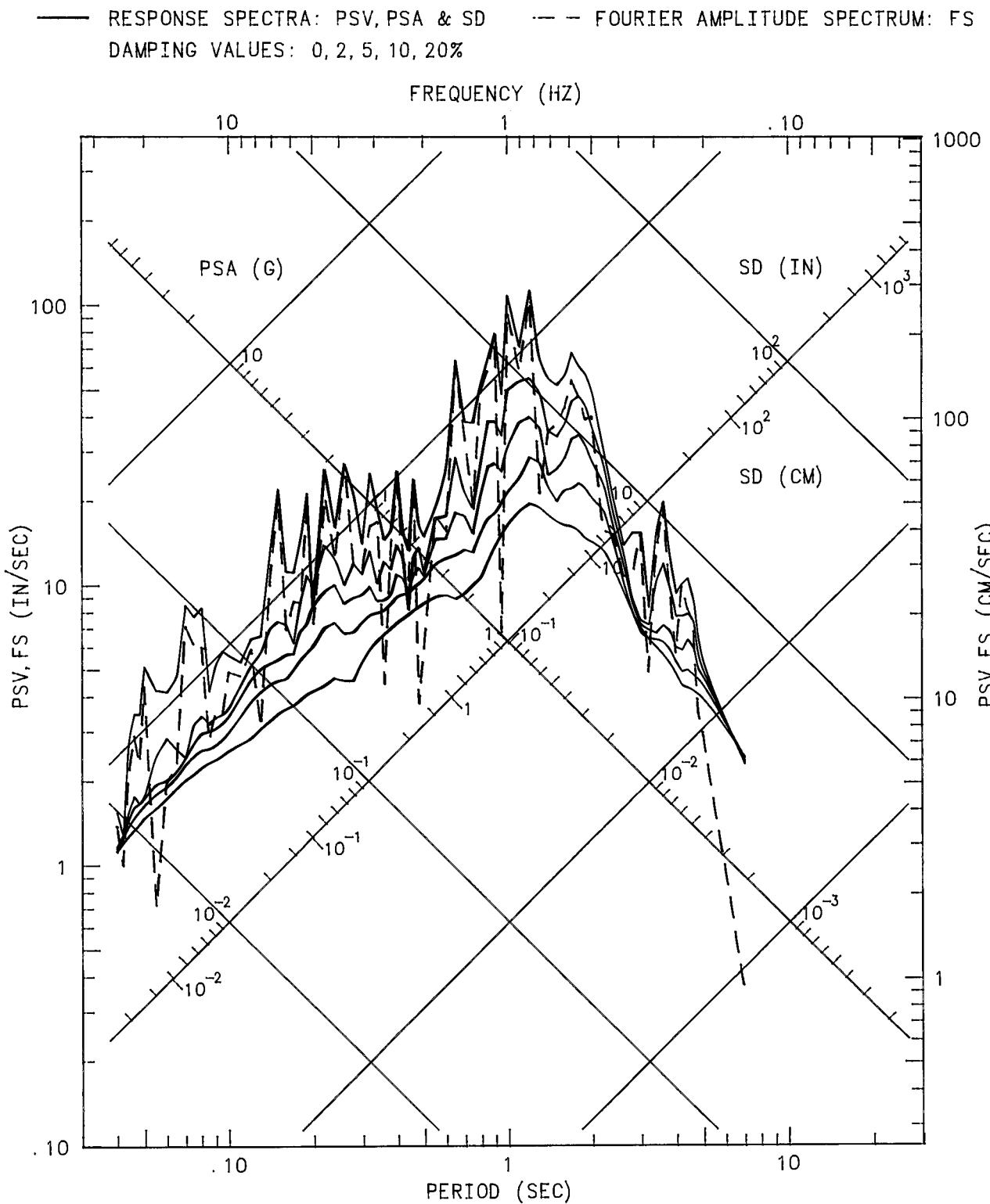
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 25): TRAN (HINGE NEAR BENT 10, W. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 26): TRAN (HINGE NEAR BENT 10, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

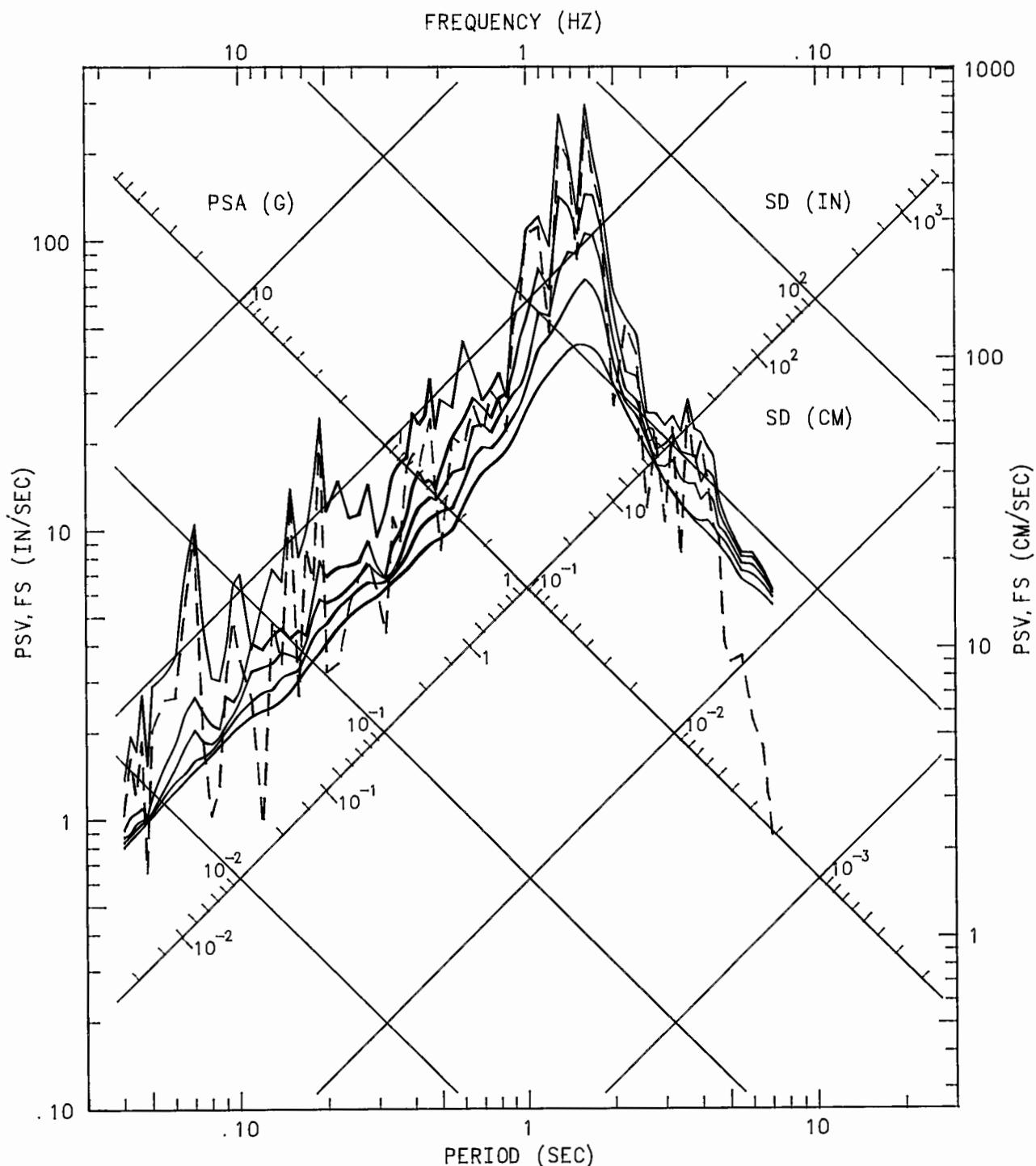


BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 28): LONG (HINGE NEAR BENT 11, W. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

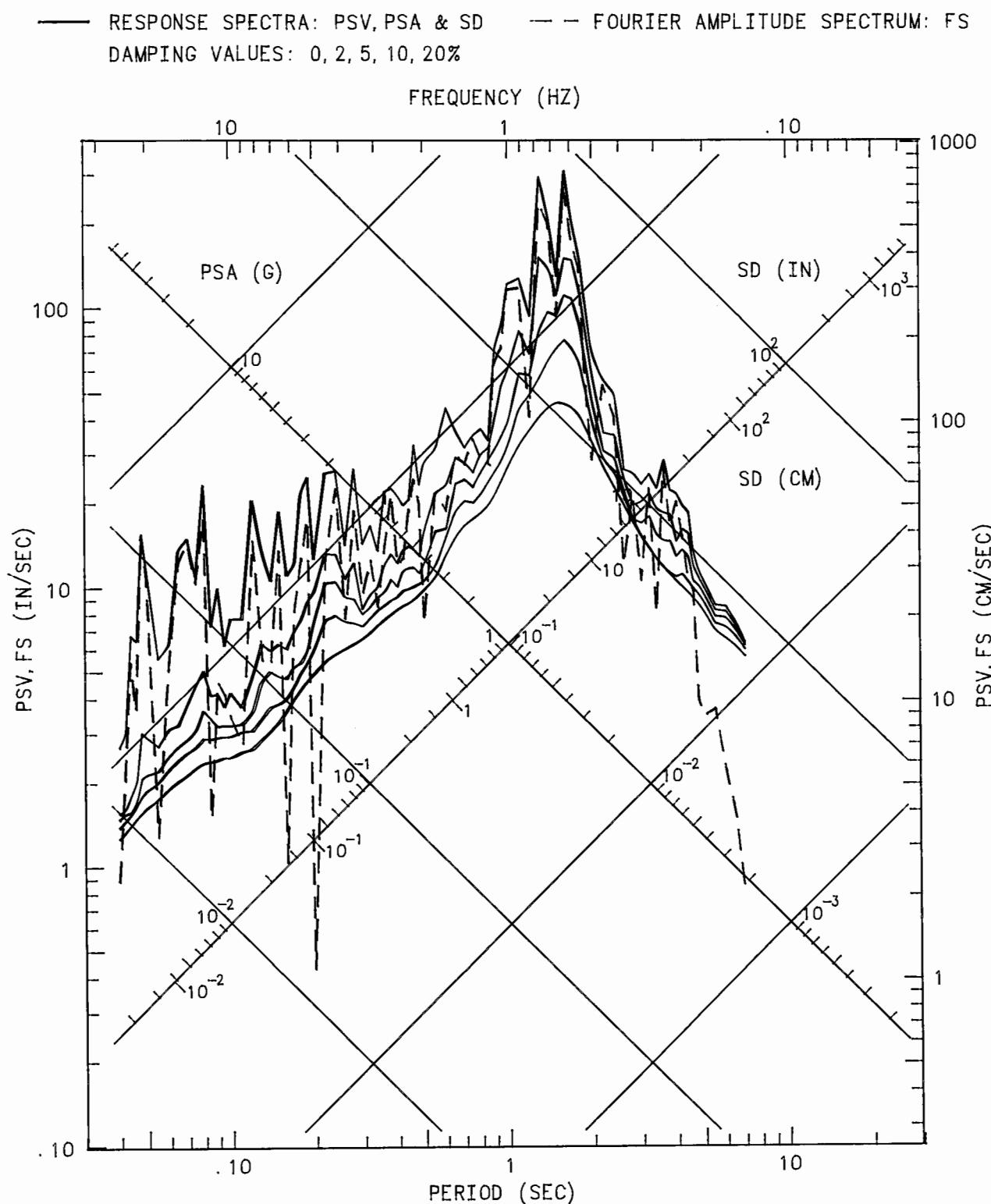


BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 29): TRAN (HINGE NEAR BENT 11, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

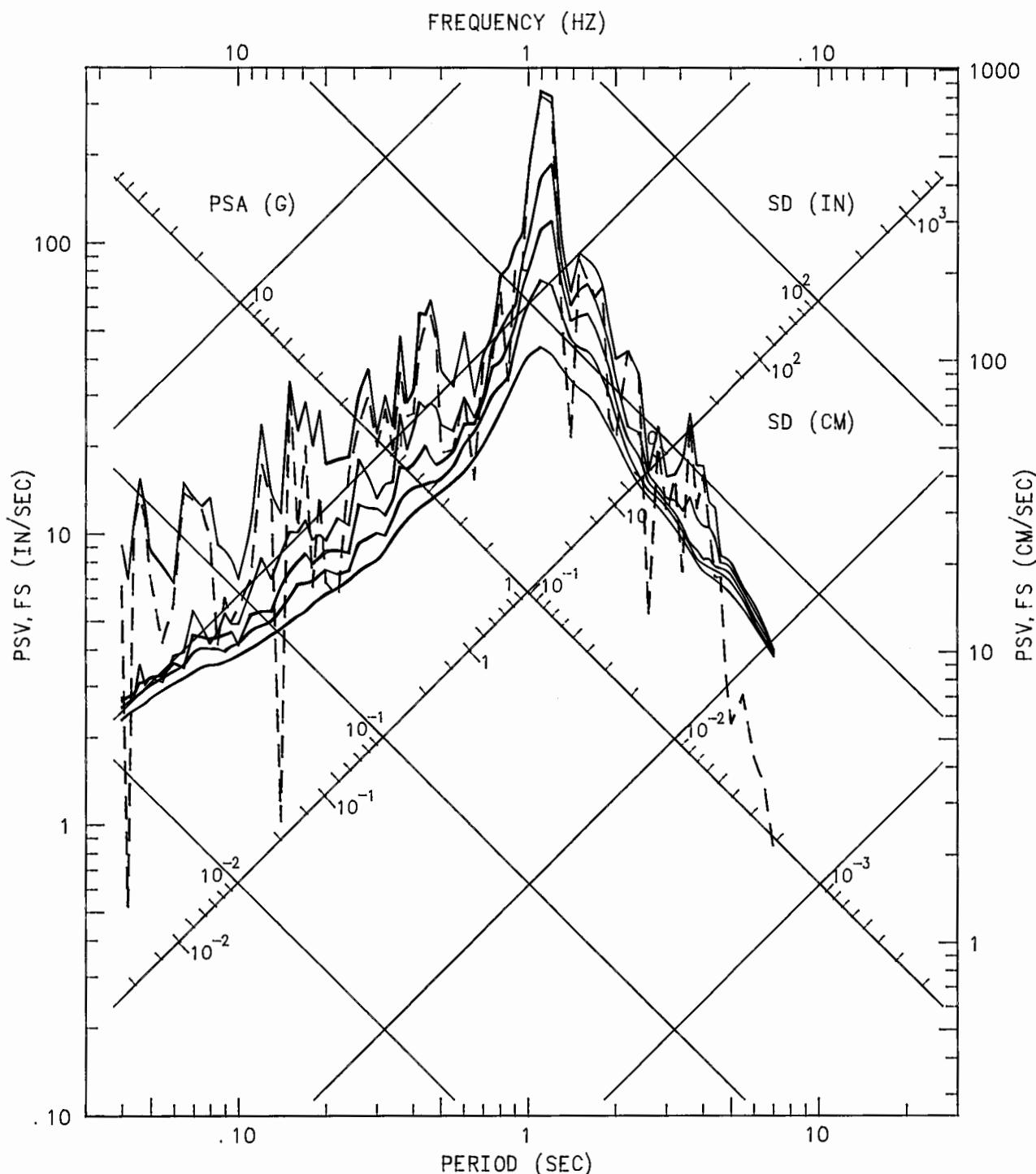


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 30): TRAN (HINGE NEAR BENT 11, E. SIDE)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

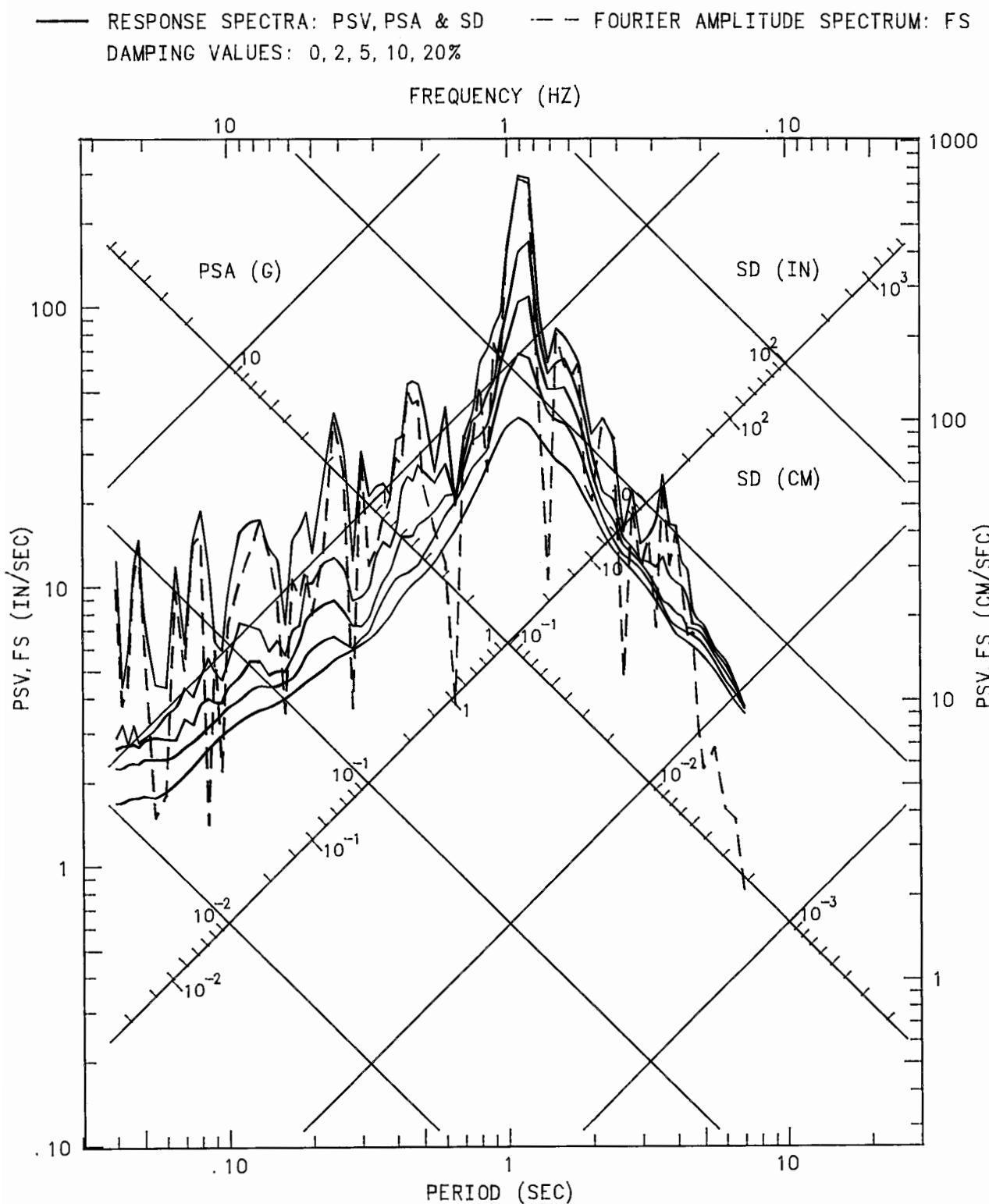


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 31): TRAN (HINGE NEAR BENT 14, W. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%

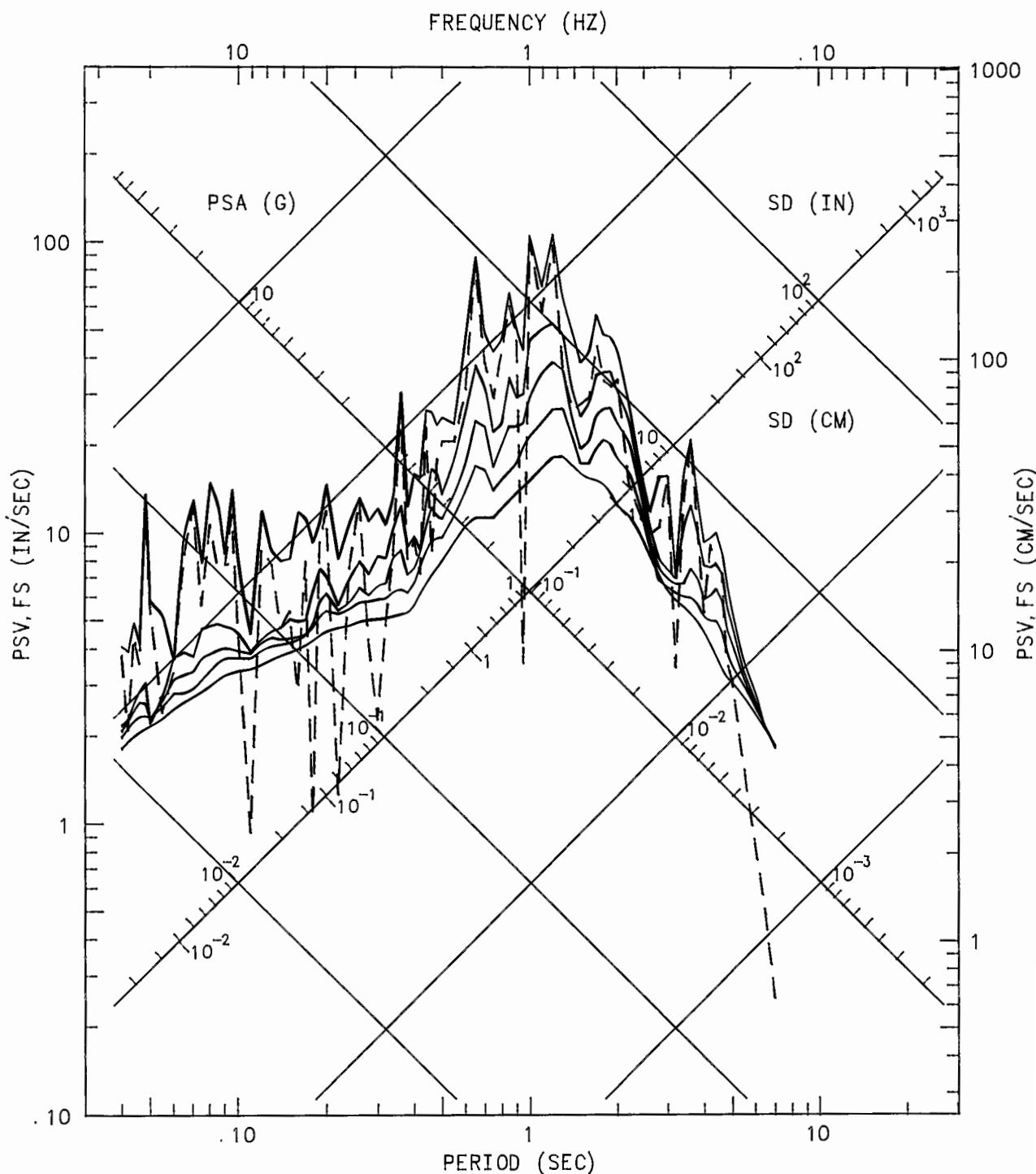


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 32): TRAN (HINGE NEAR BENT 14, E. SIDE)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

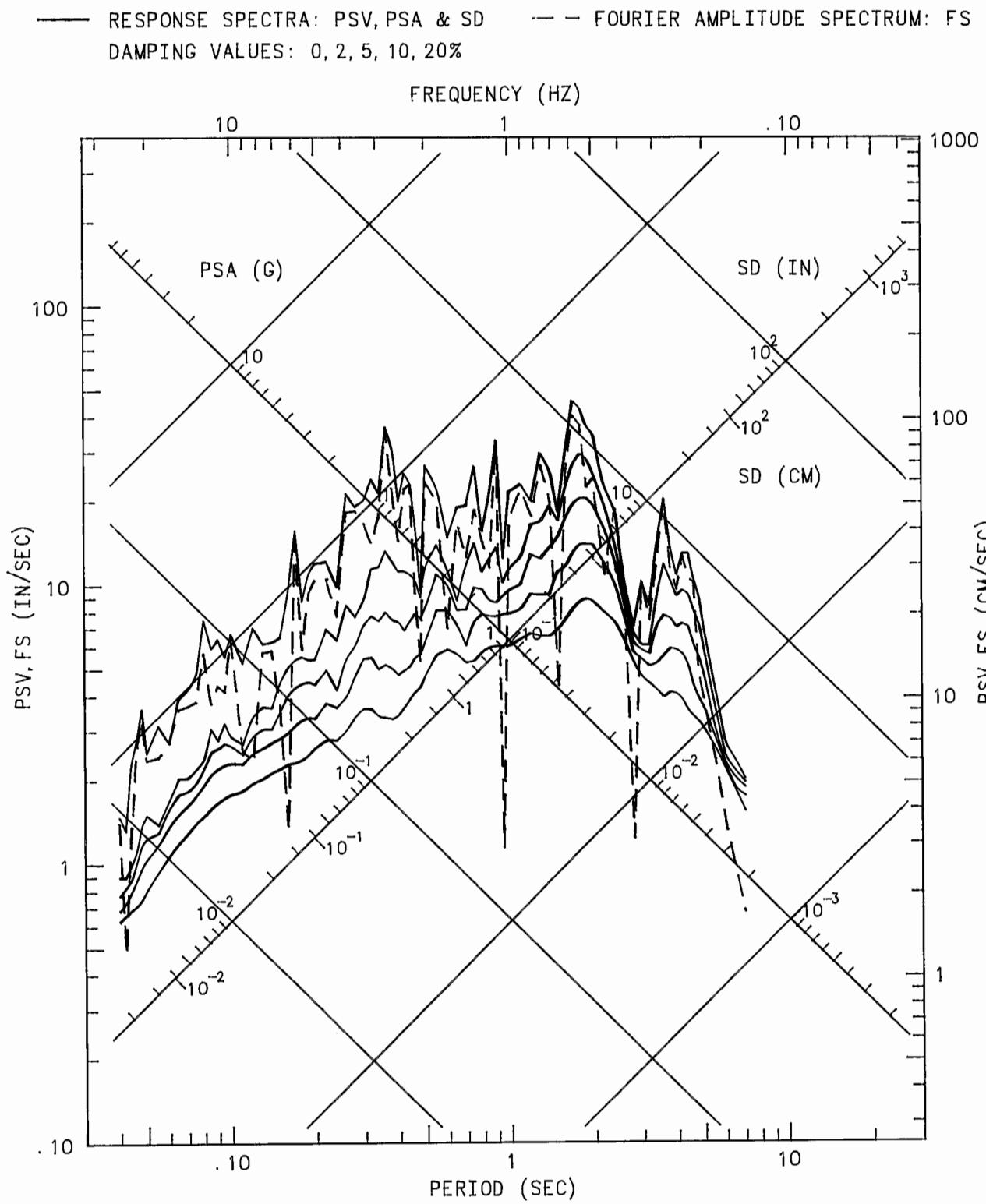


BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 1 (STA CHN 33): LONG (HINGE NEAR BENT 11, E. SIDE)  
 ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

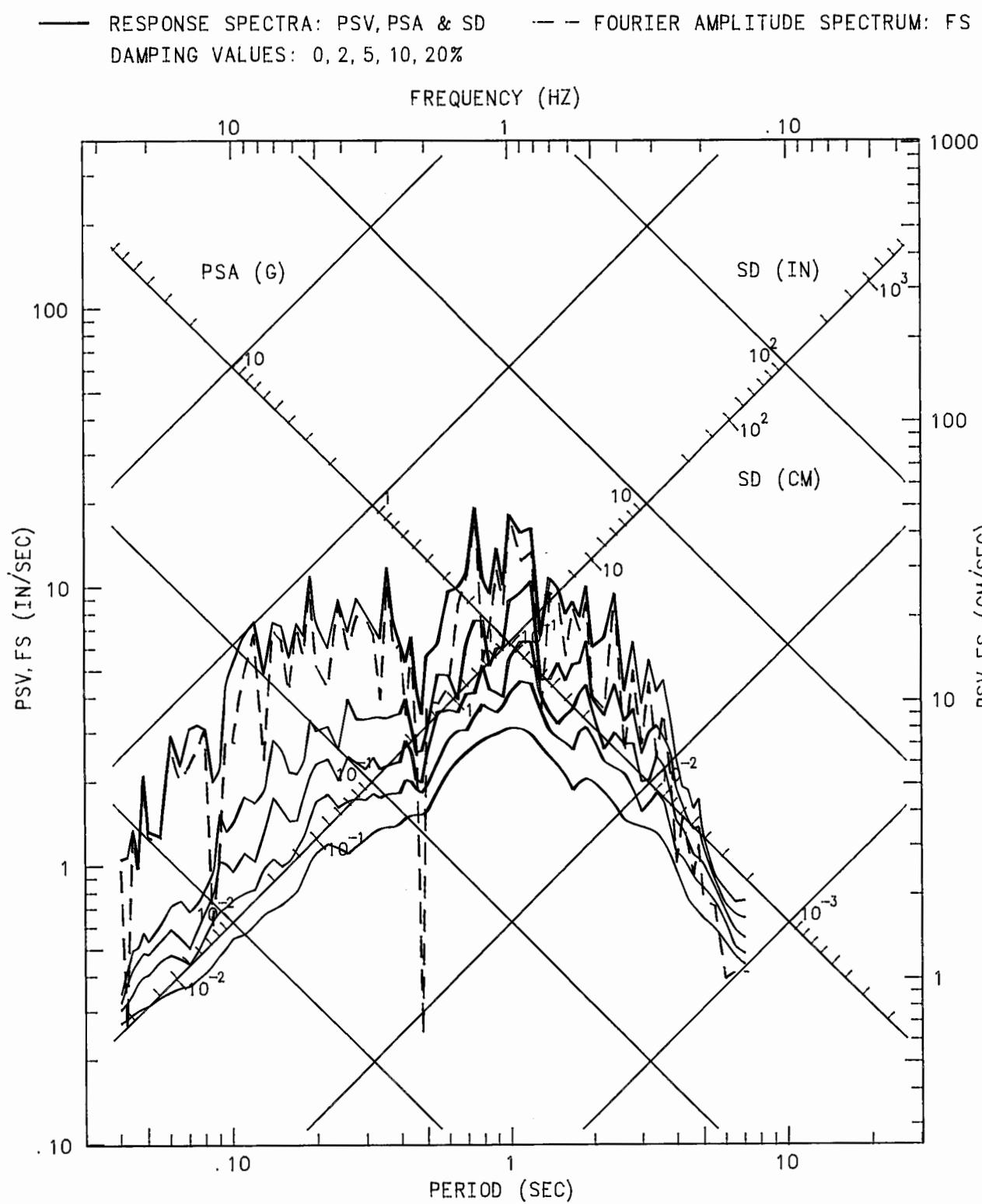
— RESPONSE SPECTRA: PSV, PSA & SD    - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 2 (STA CHN 34): LONG (NORTH ABUTMENT)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

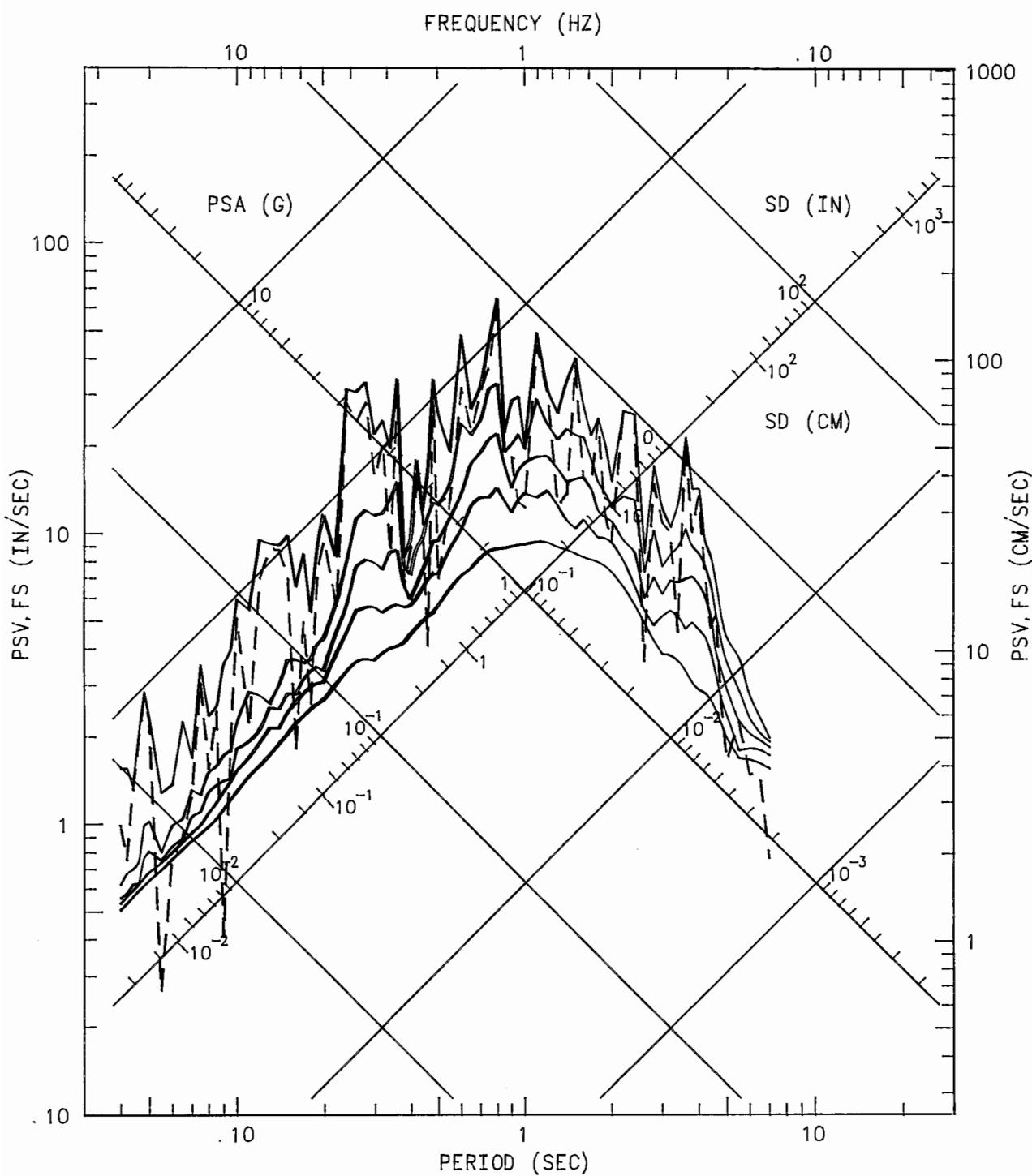


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 3 (STA CHN 35): UP (NORTH ABUTMENT)  
 ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
 23631-CS117-92180.09 082893.1235-QB92A631

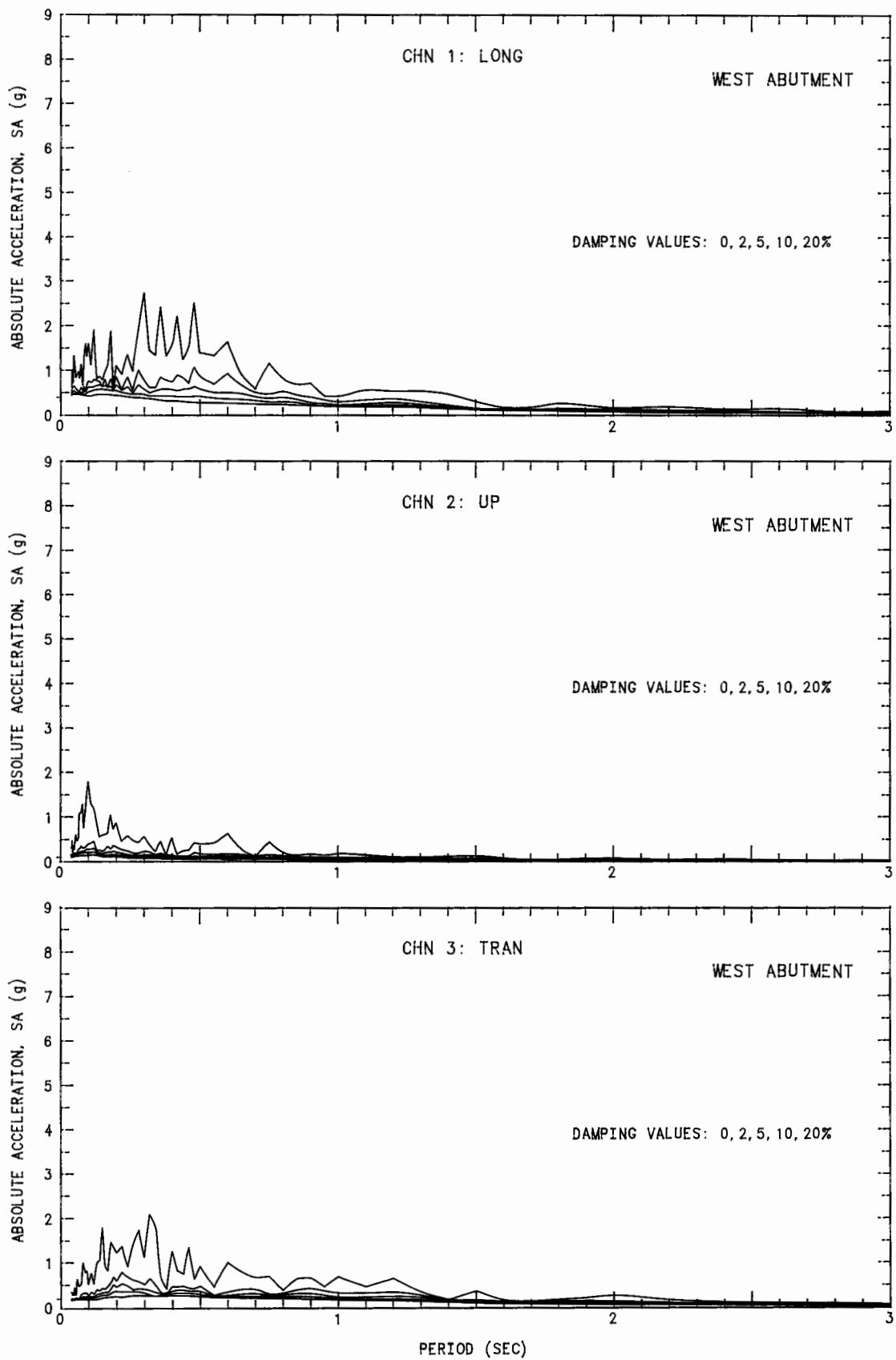


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - I10/215 INTERCHANGE  
 CHN 4 (STA CHN 36): TRAN (NORTH ABUTMENT)  
 ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23631-CS117-92180.09 082893.1235-QB92A631

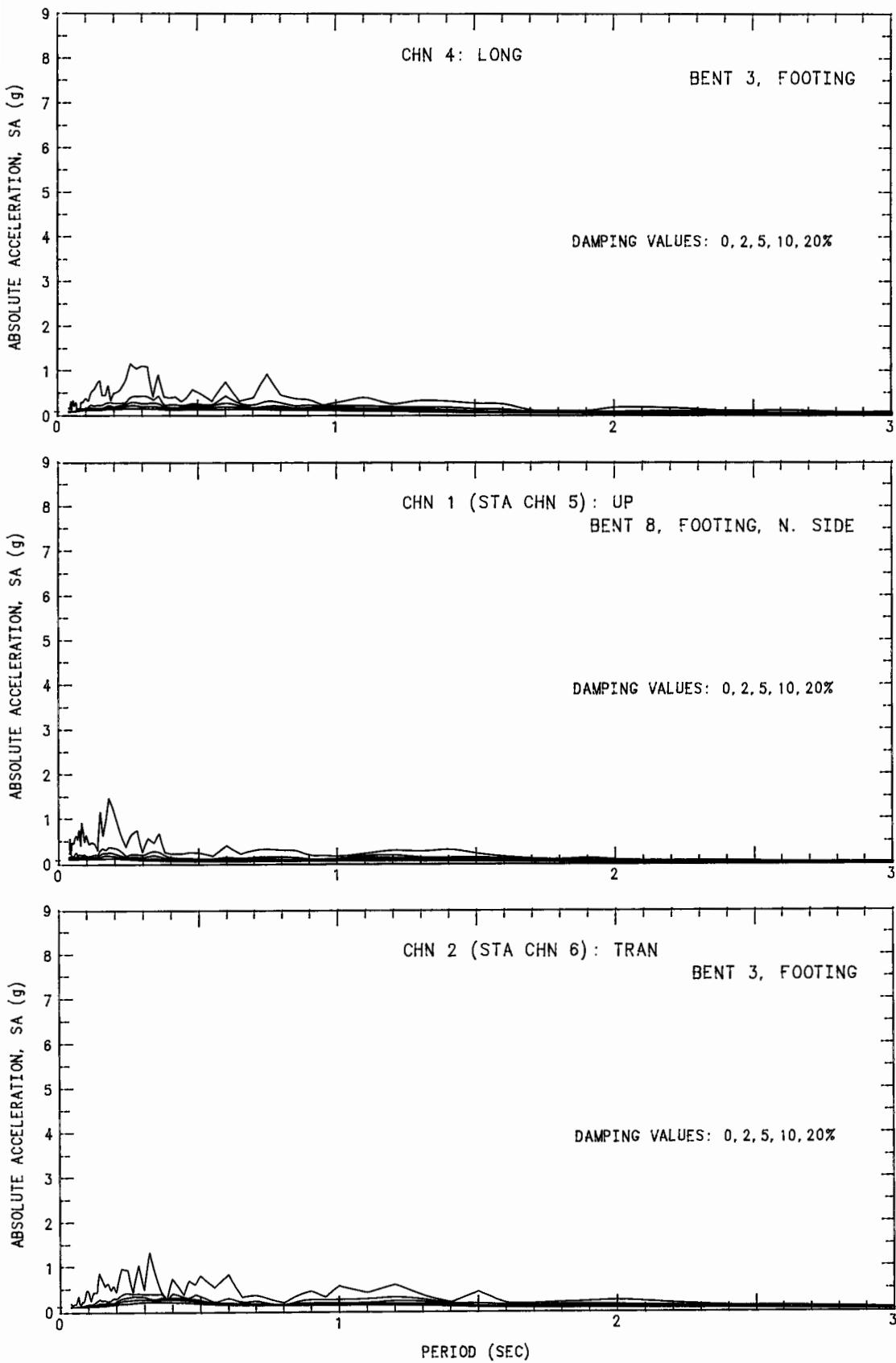
— RESPONSE SPECTRA: PSV, PSA & SD    - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



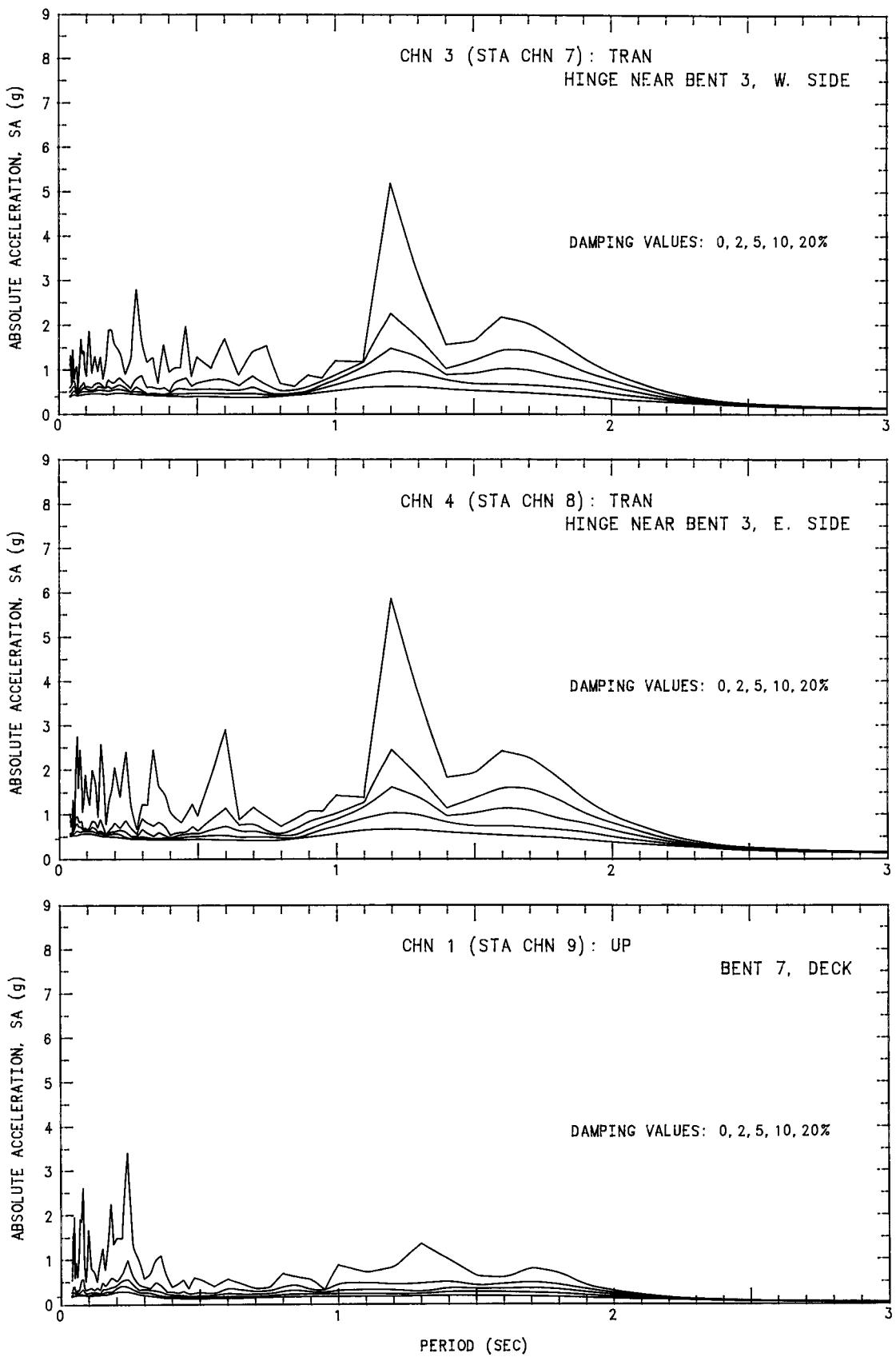
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0775-92180.09 082893.1235-QB92A631



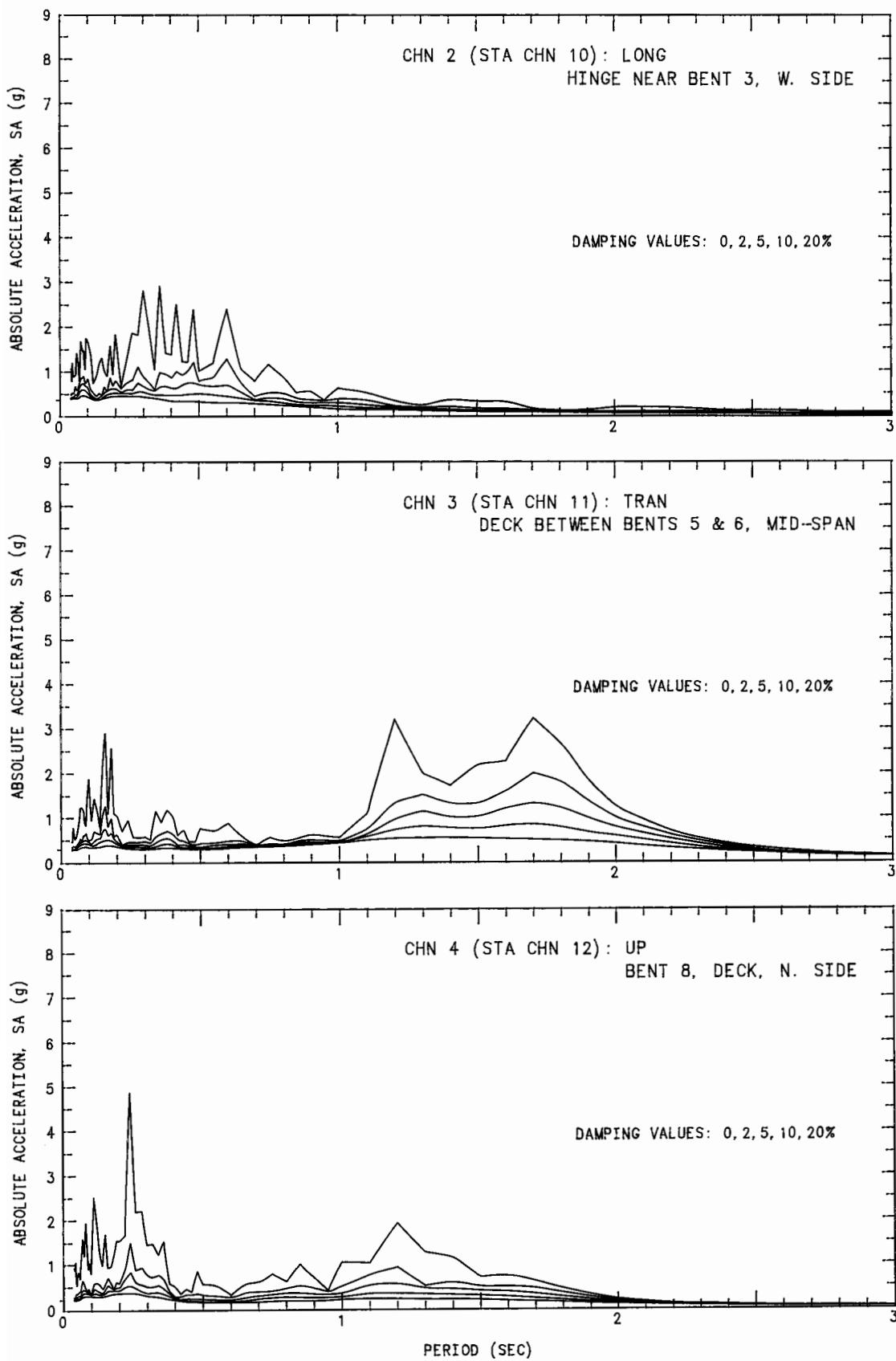
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0775-92180.09 082893.1235-QB92A631



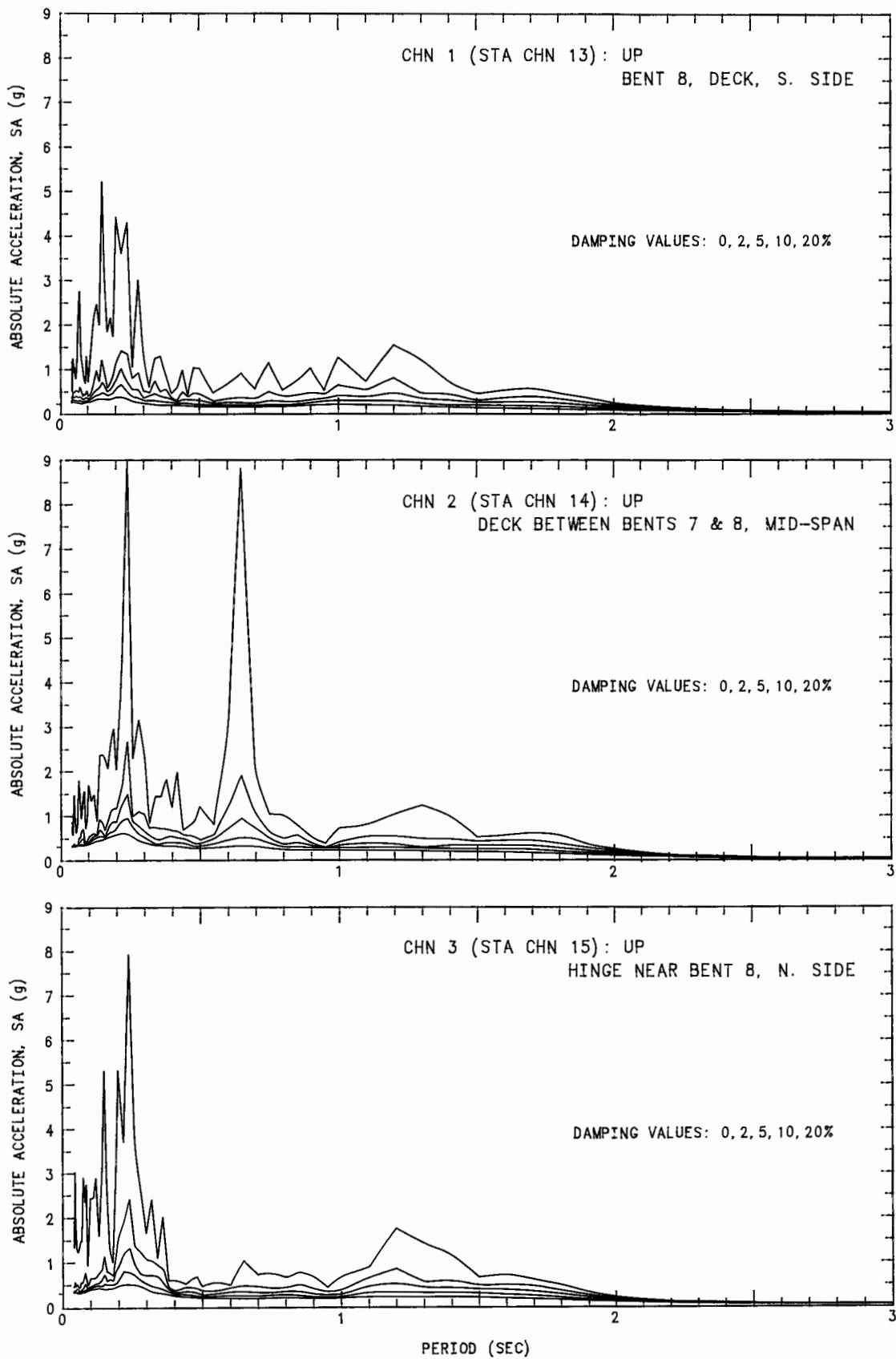
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0776-92180.09 082893.1235-QB92A631



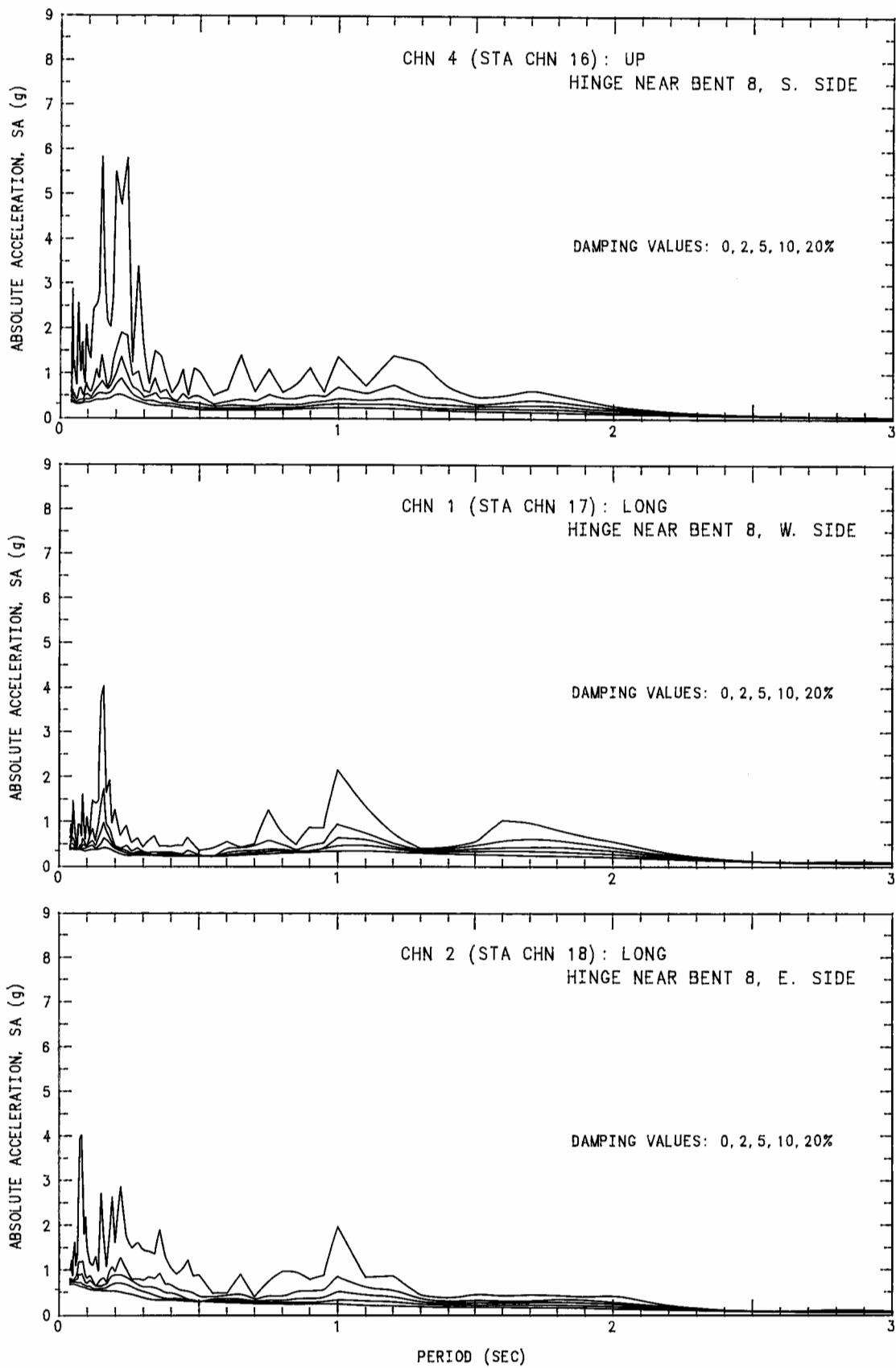
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAHM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0777-92180.09 082893.1235-QB92A631



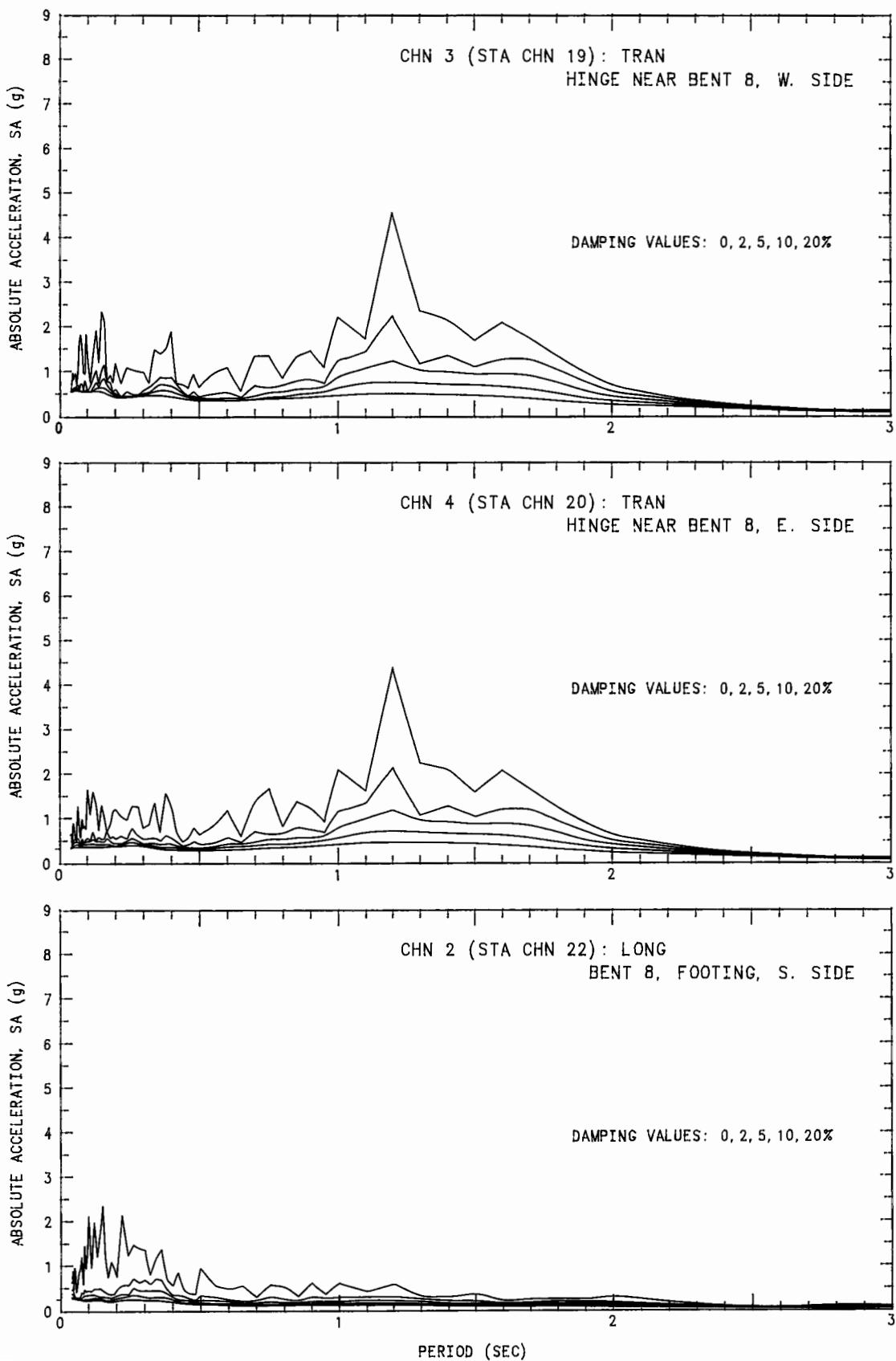
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0778-92180.09 082893.1235-QB92A631



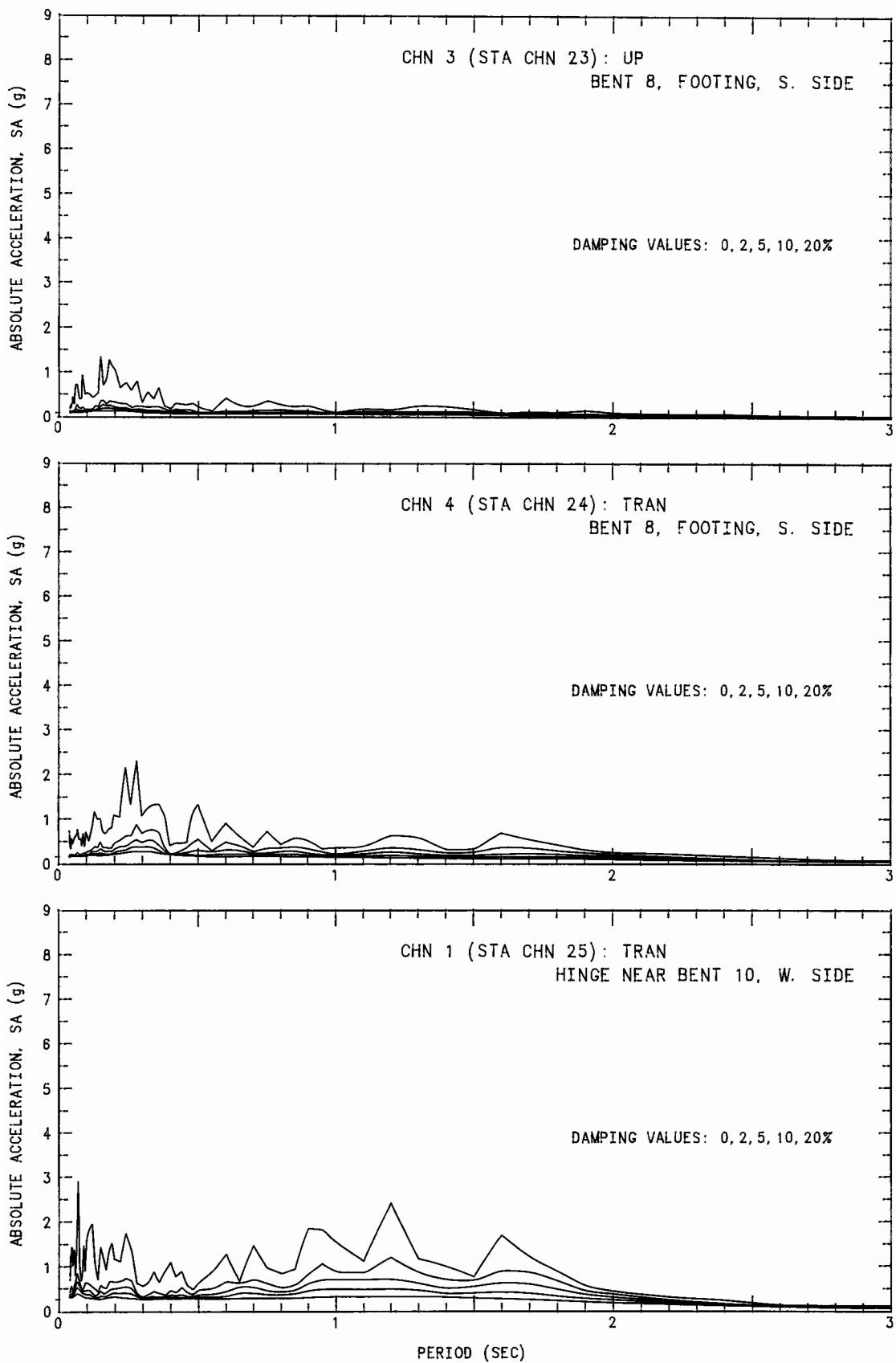
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0778-92180.09 082893.1235-QB92A631



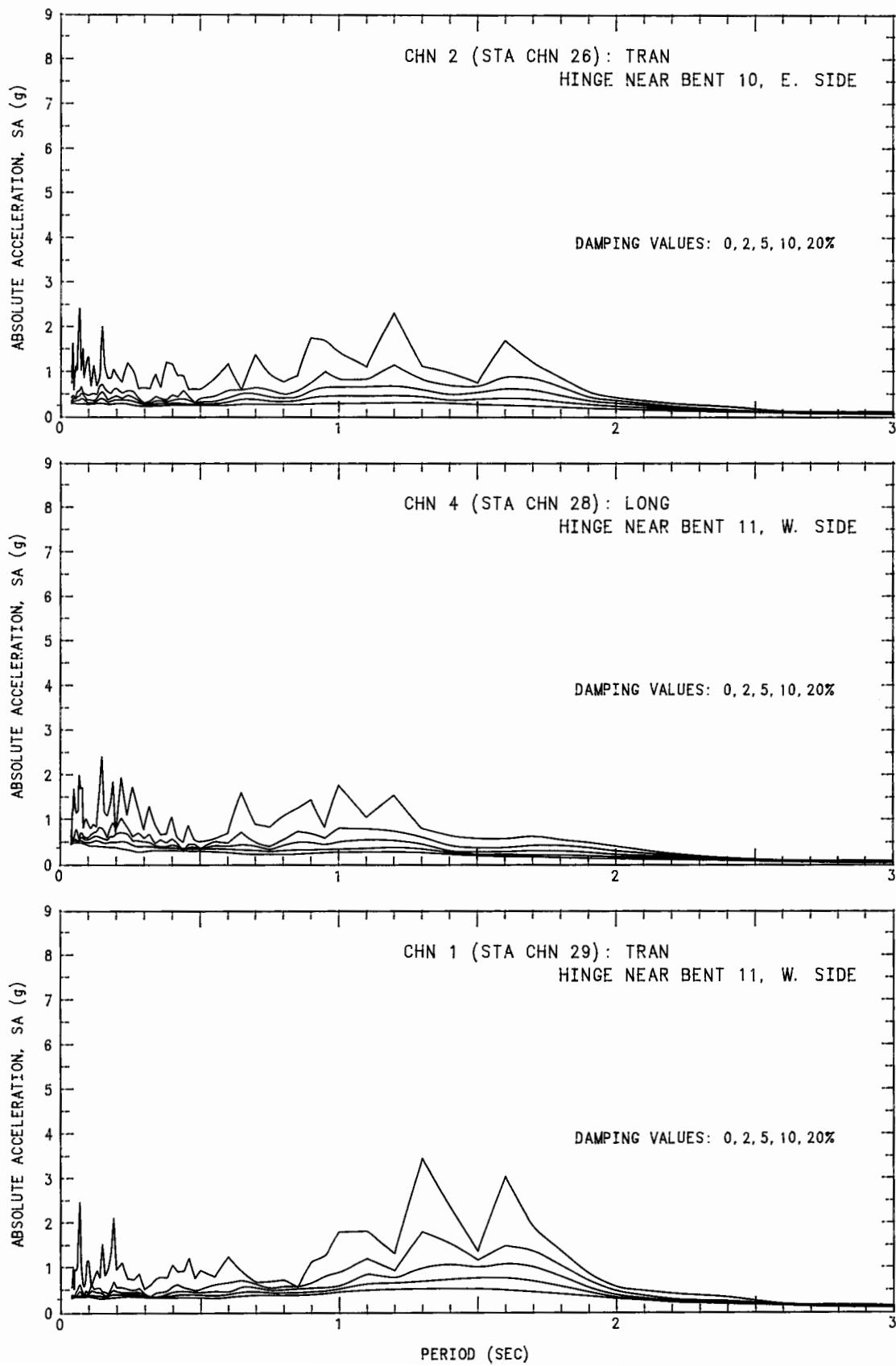
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0779-92180.09 082893.1235-QB92A631



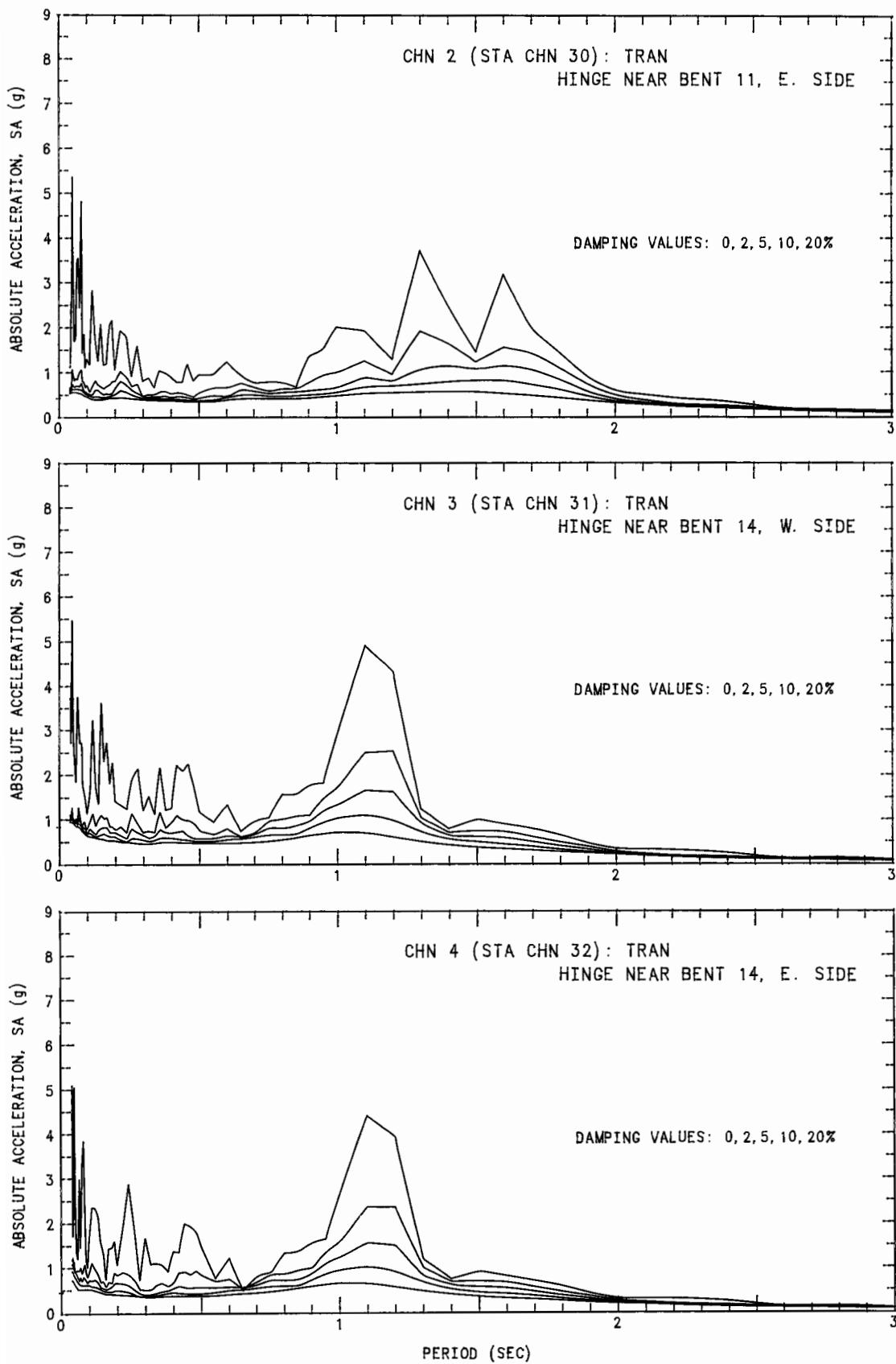
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0780-92180.09 082893.1235-QB92A631



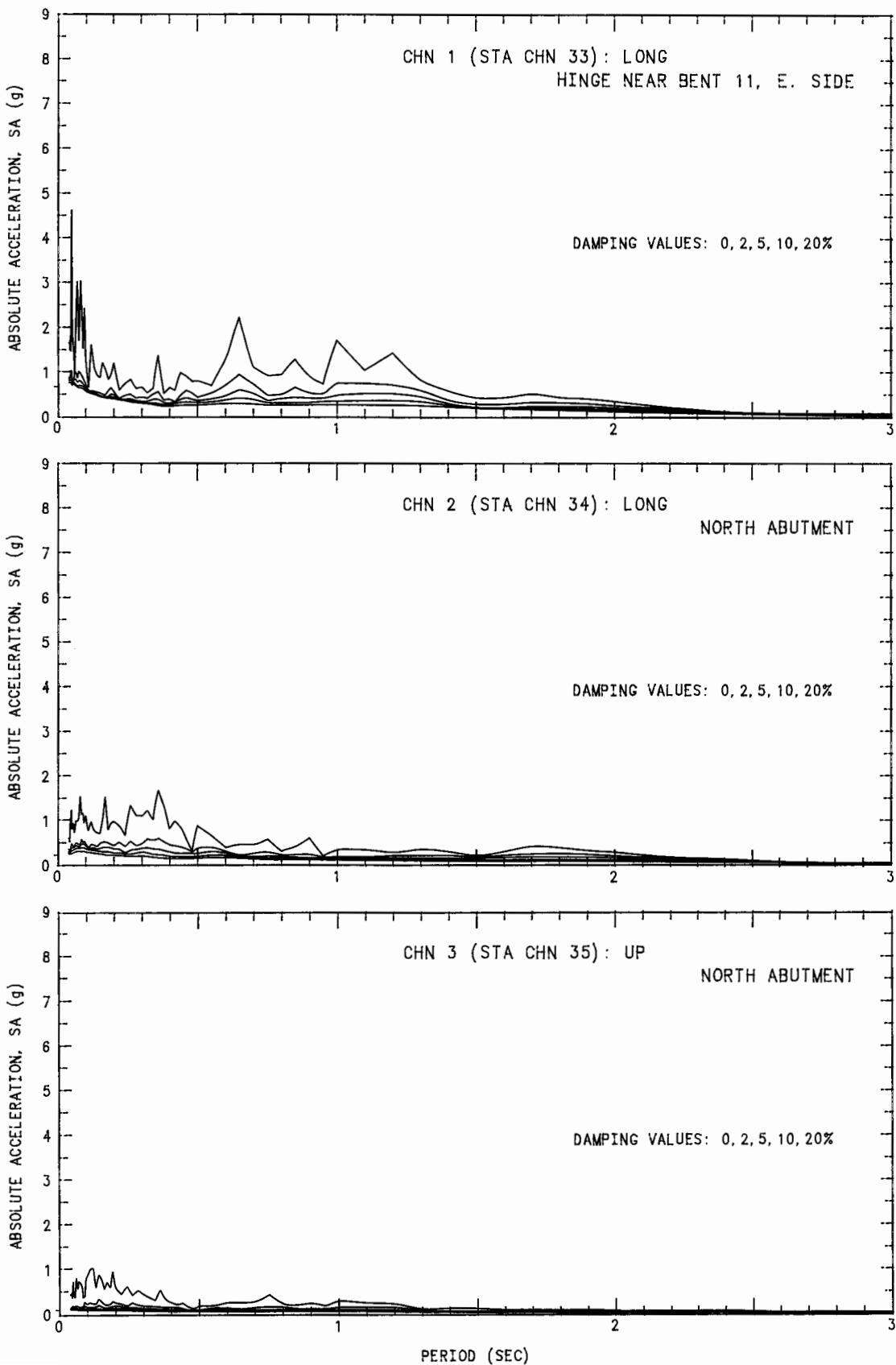
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0781-92180.09 082893.1235-QB92A631



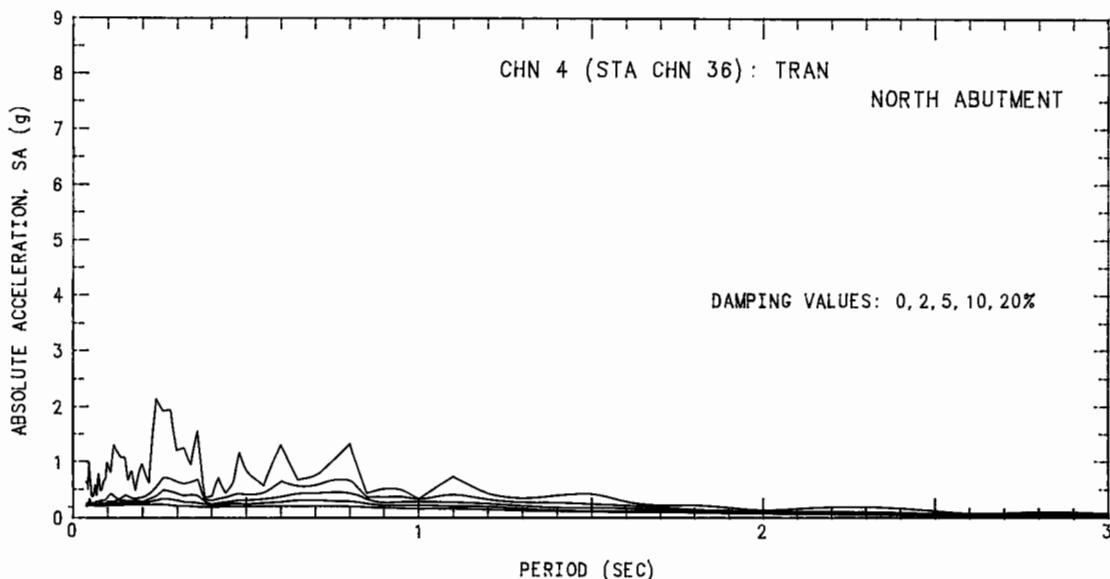
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0782-92180.09 082893.1235-QB92A631



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0783-92180.09 082893.1235-QB92A631



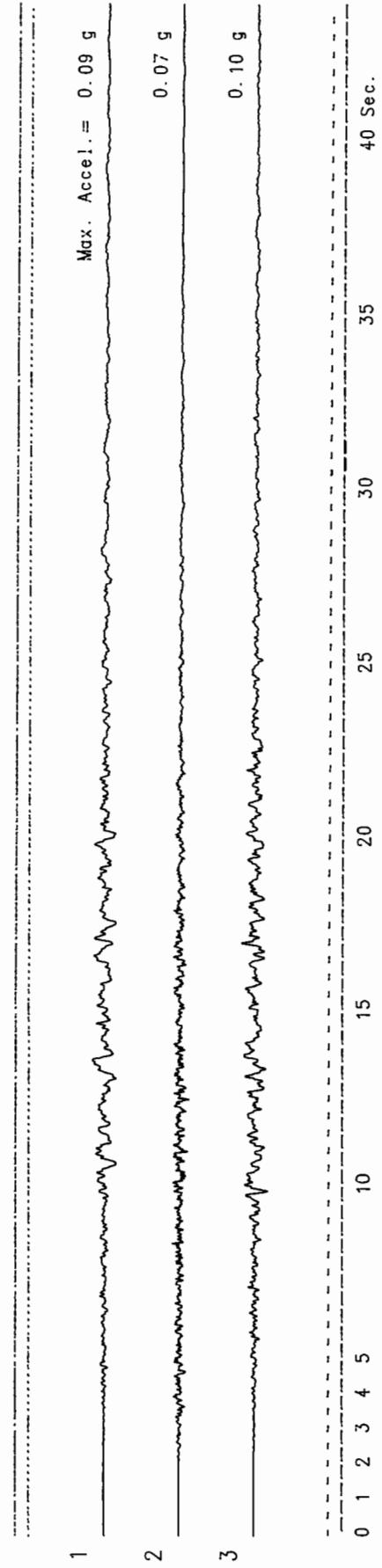
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO -- I10/215 INTERCHANGE  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 HZ.  
23631-E0783-92180.09 082893.1235-QB92A631



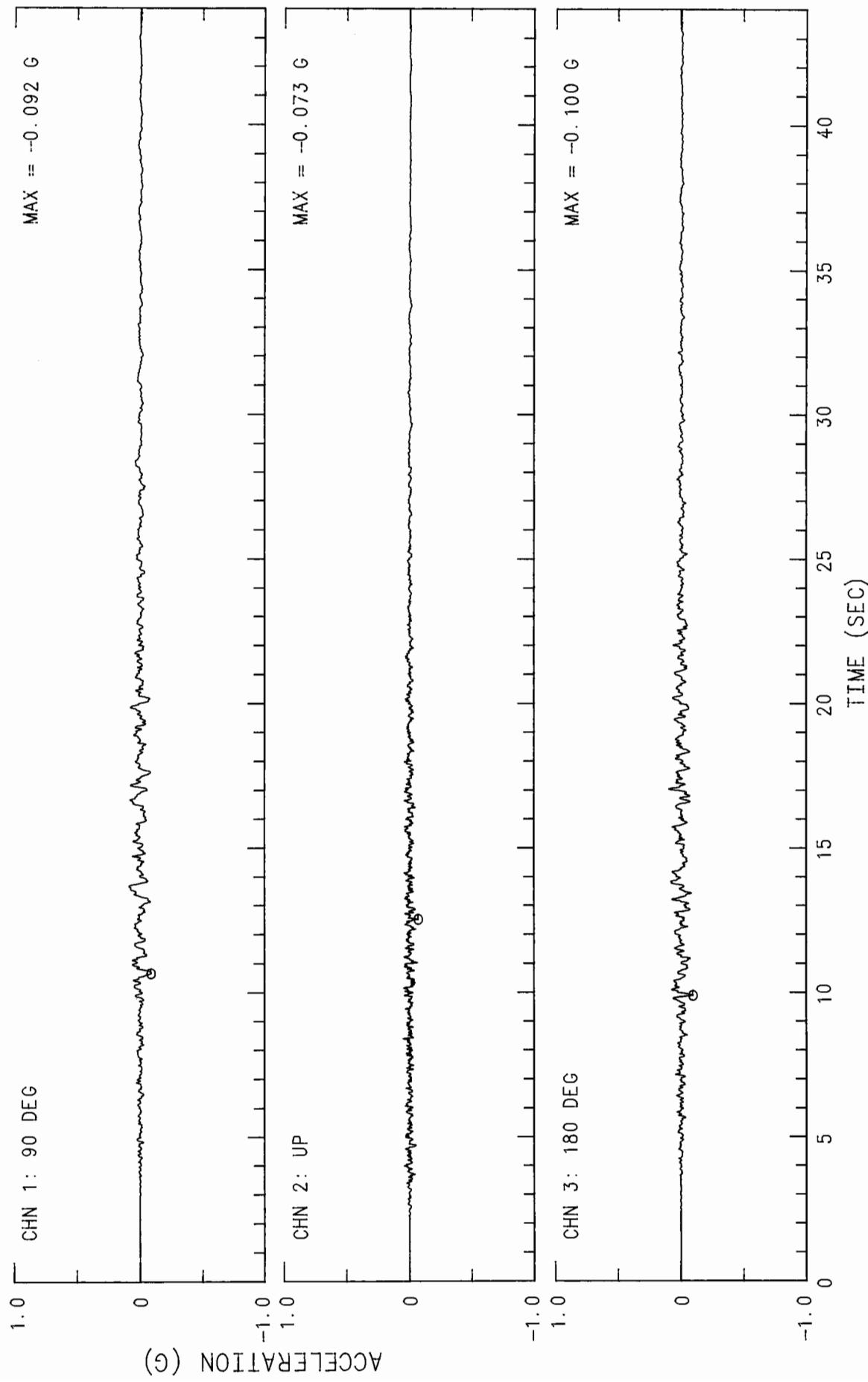


San Bernardino - E & Hospitality  
(CSMIP Station 23542)

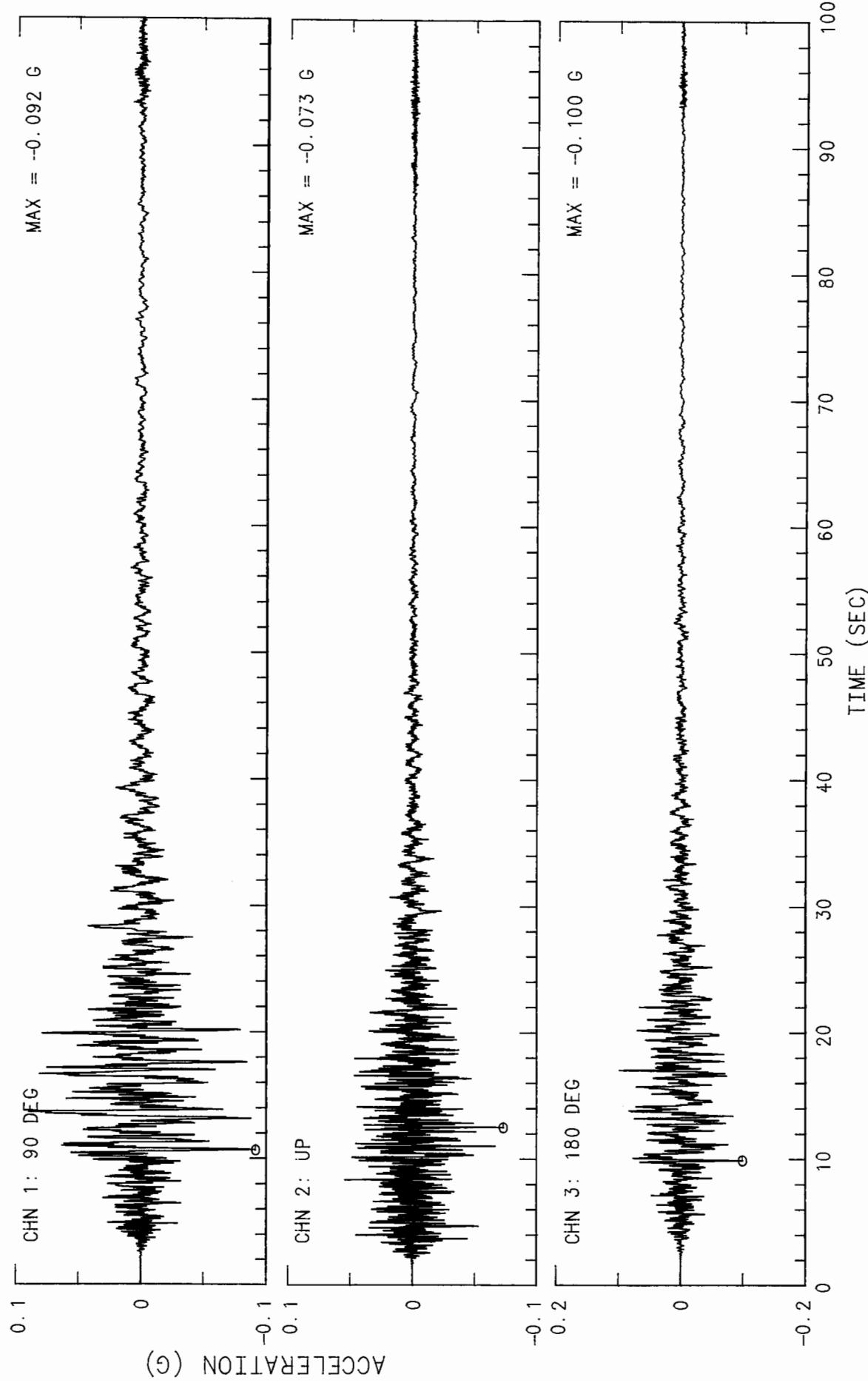
RECORD 23542-E0557-92181.09



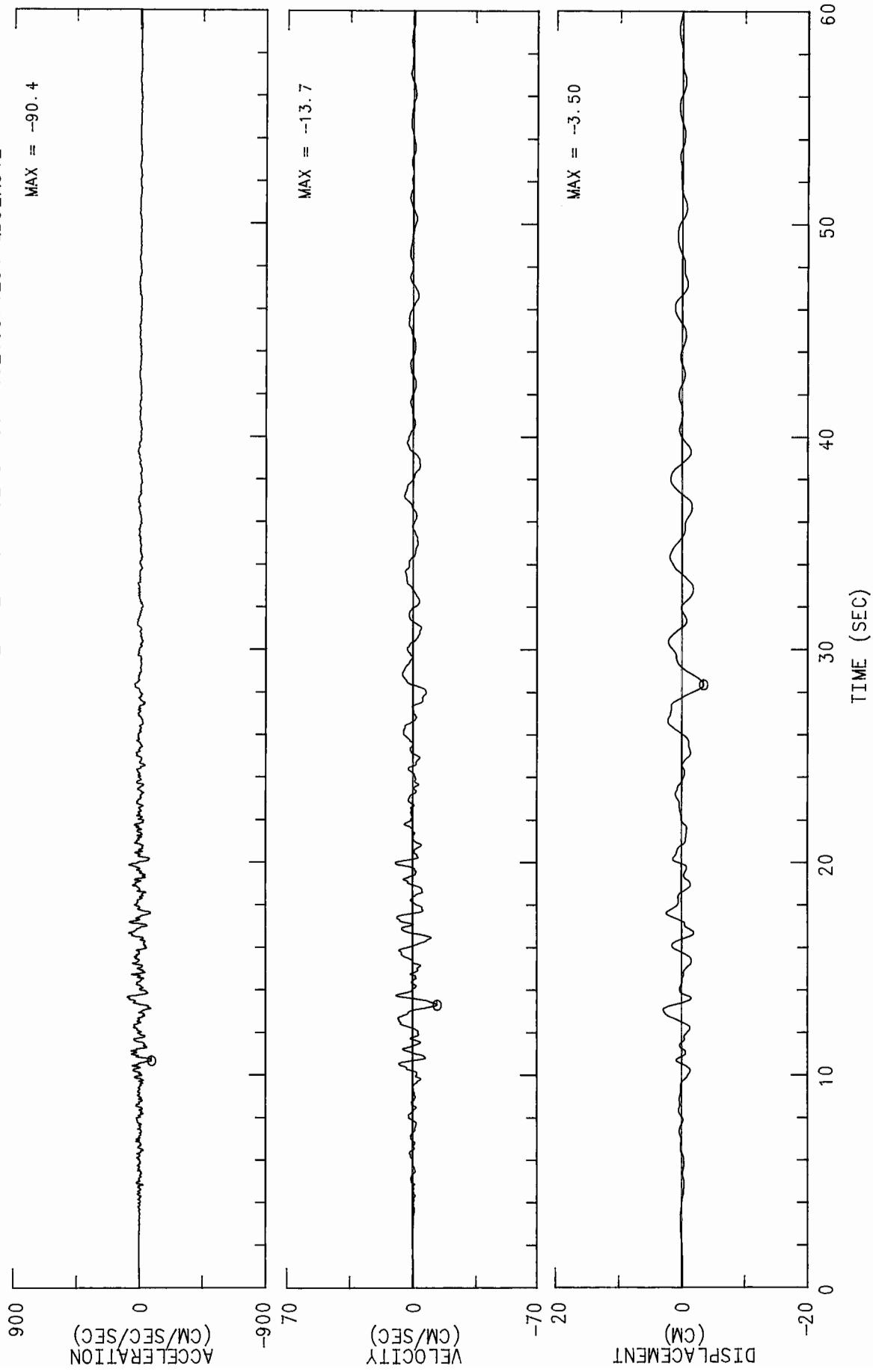
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - E & HOSPITALITY  
UNCORRECTED ACCELEROMGRAM 23542-E0557-92181.09 102193.1112-QB92A542

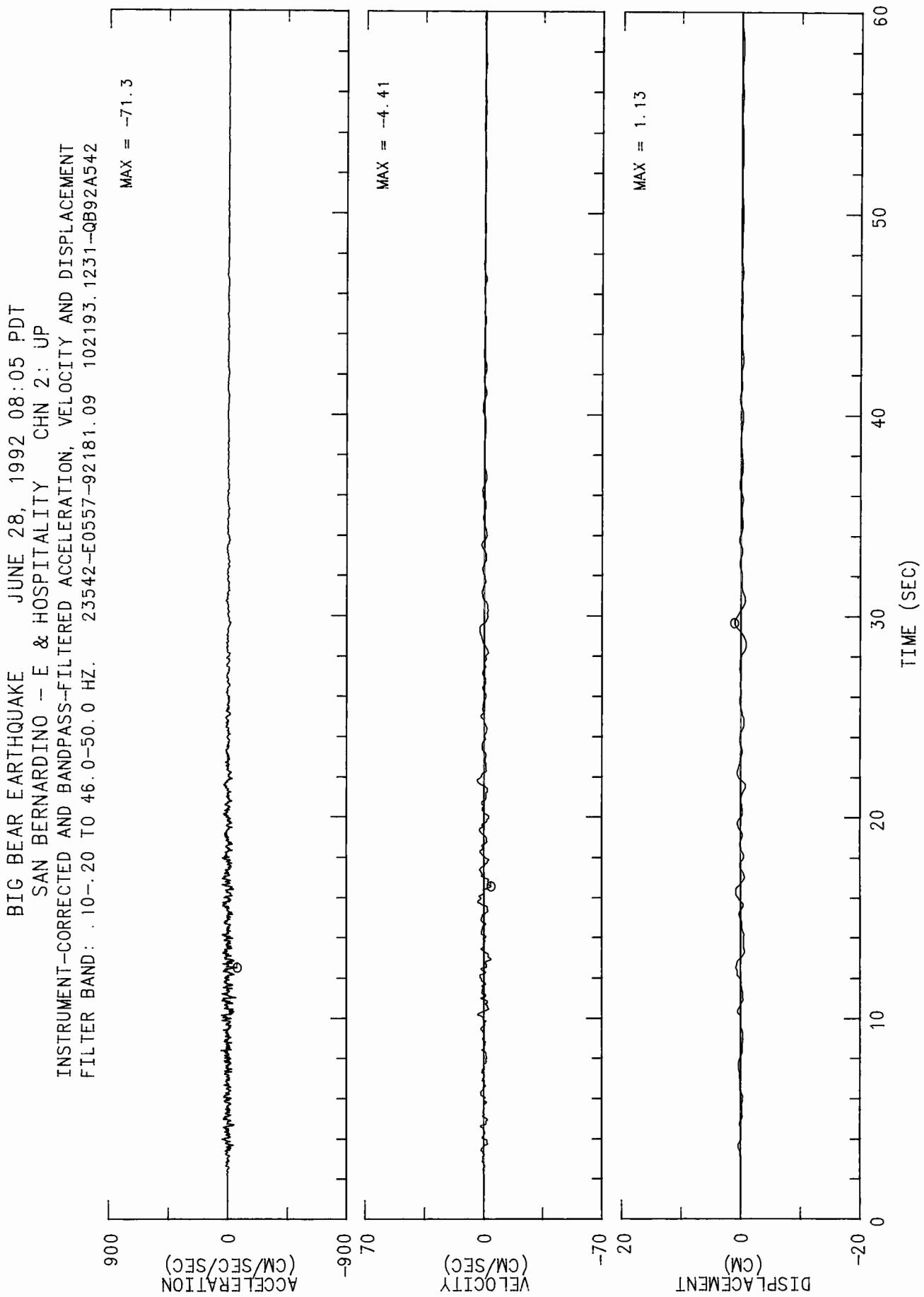


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - E & HOSPITALITY  
 UNCORRECTED ACCELEROMGRAM 23542-E0557-92181.09 102193.1112-QB92A542

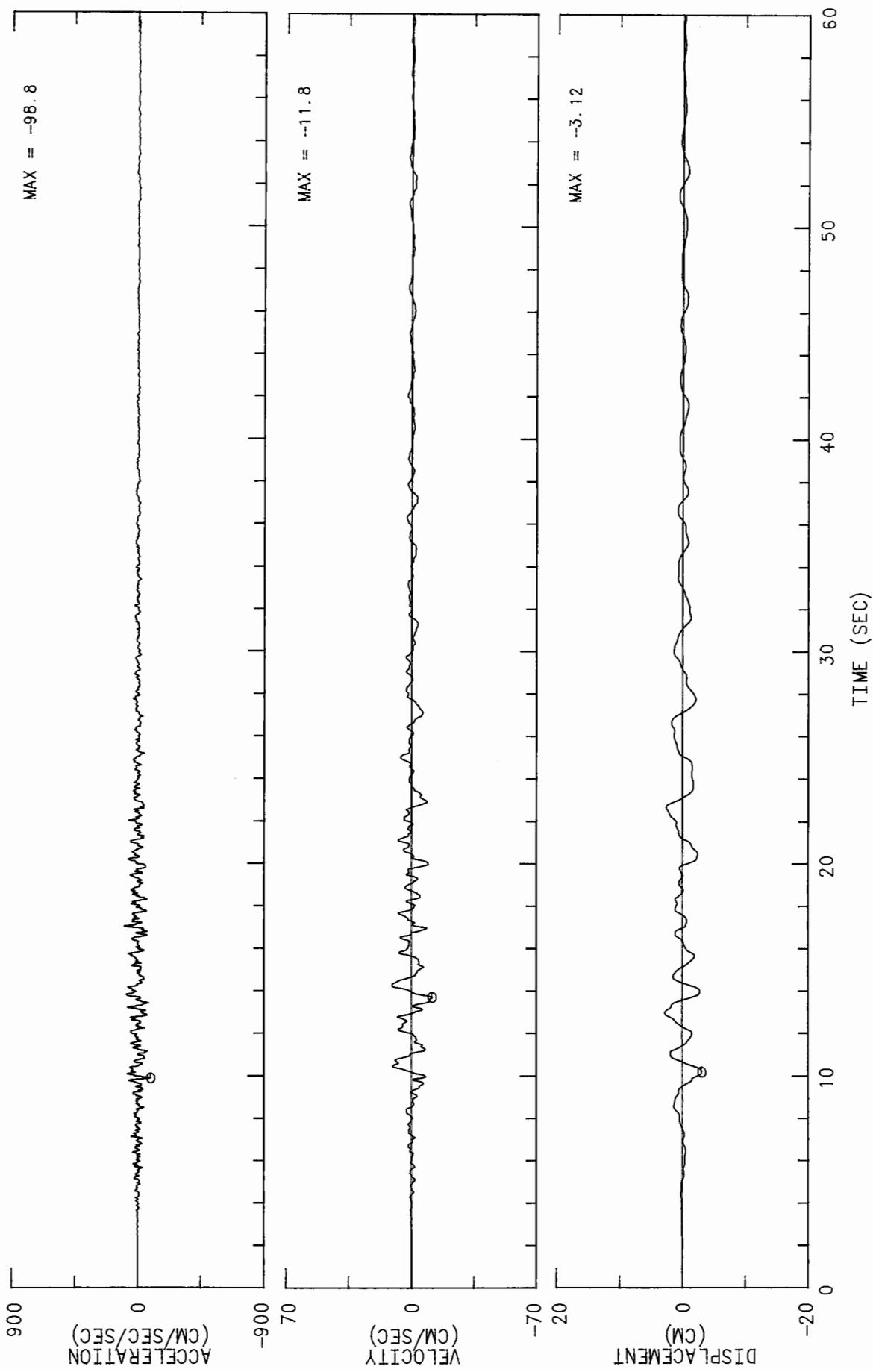


BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - E & HOSPITALITY CHN 1: 90 DEG  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23542-E0557-92181.09 102193.1231-QB92A542





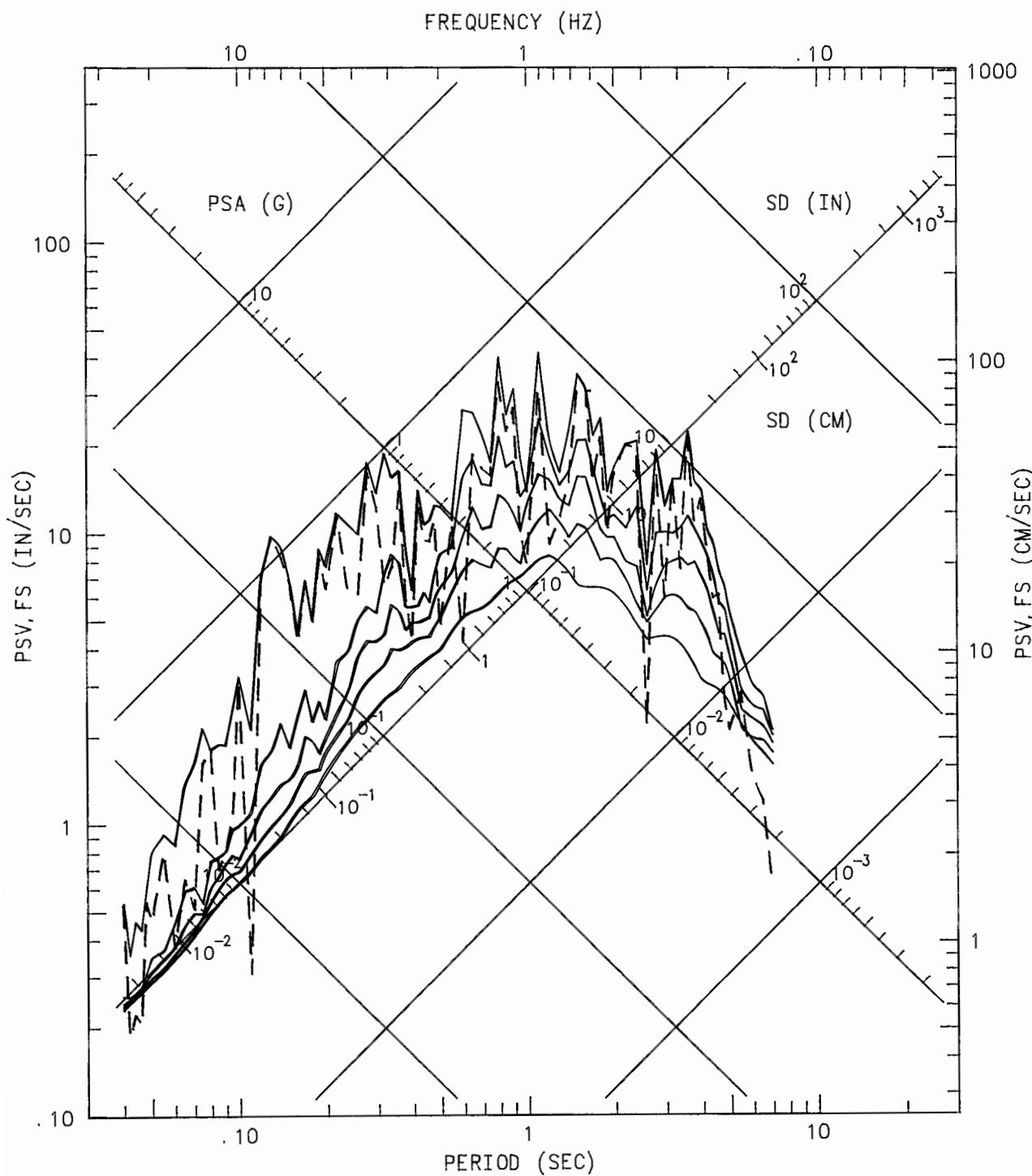
BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - E & HOSPITALITY CHN 3: 180 DEG  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .10-.20 TO 46.0-50.0 HZ. 23542-E0557-92181.09 102193.1231-QB92A542



BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - E & HOSPITALITY  
 CHN 1: 90 DEG

ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23542-E0557-92181.09 102193.1304-QB92A542

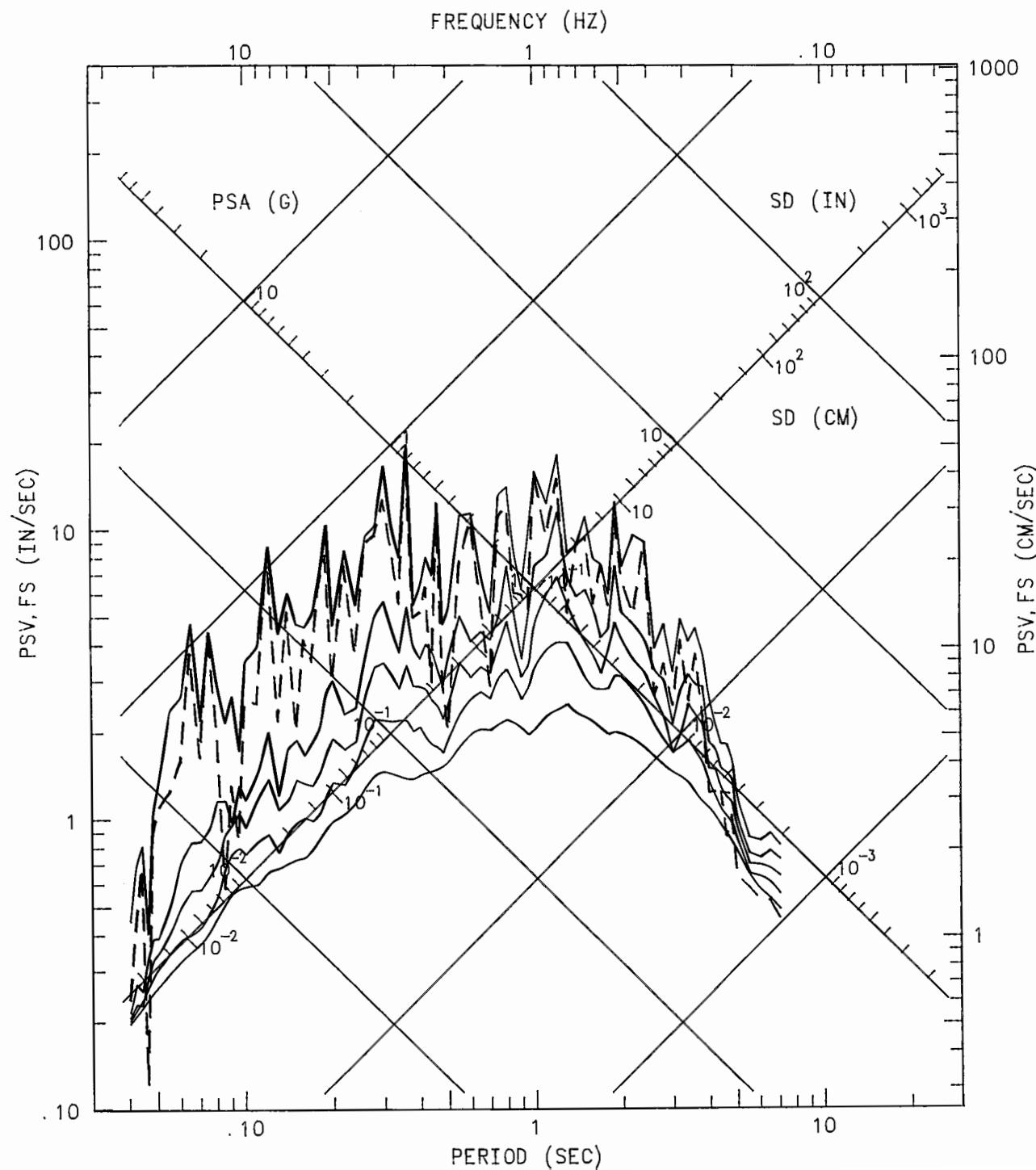
— RESPONSE SPECTRA: PSV, PSA & SD      - - - FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



BIG BEAR EARTHQUAKE      JUNE 28, 1992 08:05 PDT  
 SAN BERNARDINO - E & HOSPITALITY  
 CHN 2: UP

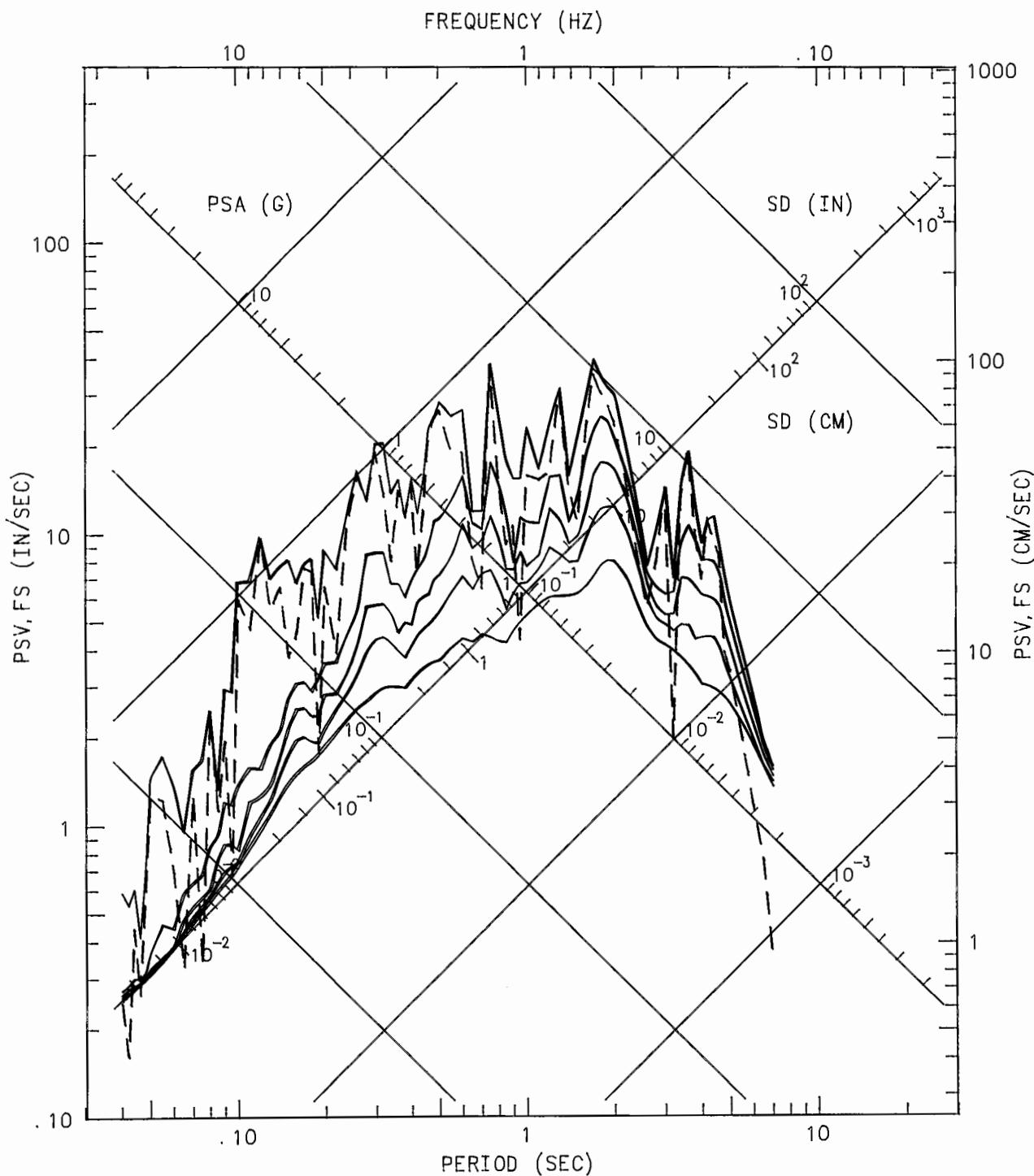
ACCELEROGRAF BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
 23542-E0557-92181.09 102193.1304-QB92A542

— RESPONSE SPECTRA: PSV, PSA & SD      — — FOURIER AMPLITUDE SPECTRUM: FS  
 DAMPING VALUES: 0, 2, 5, 10, 20%



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - E & HOSPITALITY  
CHN 3: 180 DEG  
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23542-E0557-92181.09 102193.1304-QB92A542

— RESPONSE SPECTRA: PSV, PSA & SD      - - - FOURIER AMPLITUDE SPECTRUM: FS  
DAMPING VALUES: 0, 2, 5, 10, 20%



BIG BEAR EARTHQUAKE JUNE 28, 1992 08:05 PDT  
SAN BERNARDINO - E & HOSPITALITY  
ACCELEROGRAM BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 46.0-50.0 Hz.  
23542-E0557-92181.09 102193.1304-QB92A542

